

# AMERICAN FORESTS



OCTOBER

1940

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## AMERICAN FORESTS

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Published monthly by

### THE AMERICAN FORESTRY ASSOCIATION

919 Seventeenth Street  
Washington, D. C.

The American Forestry Association is a citizens' organization for the advancement of intelligent management and use of the country's forests and related resources of soil, water, wildlife and outdoor recreation.

Its educational activities seek to bring about a better appreciation and handling of these resources, whether publicly or privately owned, that they may contribute in the highest degree to the welfare of the nation and its people.

In addition to publication of two magazines—AMERICAN FORESTS and CONSERVATION, both designed to keep before the people of the country important conservation questions and issues, the Association carries on educational projects in various fields including forest fire prevention, reforestation, protection of fish and wildlife, upstream flood control, prevention of soil erosion, preservation of wilderness areas, establishment of national forests and parks, development of forestry by private endeavor, the teaching of conservation in the schools of the country, promotion of research in timber growing and use and expansion of markets for forest products.

The Association is independent. It has no connection with any federal or state governments. It is non-political and non-commercial. All its resources and income are devoted to the advancement of conservation. It has been so operated since its founding in 1875. All citizens interested in forestry and conservation are eligible for membership.

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The Editors are not responsible for loss or injury of manuscripts and photographs while in their possession or in transit. All manuscripts should be accompanied by return postage. The Editors are not responsible for views expressed in signed articles. . . . Notice of change of address for AMERICAN FORESTS should be received by the tenth of the month preceding issue.

Member A. B. C.  
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The Base of the Suffield Oak

THE first nomination in the competition for the largest specimens of American trees—announced in the September issue of AMERICAN FORESTS—is Suffield's Chestnut Oak, in Connecticut.

The nominator is Mr. Jesse F. Smith, a vice president of the Connecticut Botanical Gardens, who lives in Suffield. The tree may or may not be the largest chestnut oak in Connecticut and the nation. Until a larger one is reported, the Sheffield oak will stand on the rolls of the American Forestry Association as the largest known chestnut oak in America. Of it Mr. Smith writes:

"As a patriot and tree lover, I hasten to put in nomination an old and revered friend—Suffield's Chestnut Oak (*Quercus prinus*), estimated by Mr. W. O. Filley, State Forester of The Connecticut Agricultural Experiment Station, to be 300 years old. It stands on a swamp-surrounded knoll formed by outercropping trap rock about two-tenths of a mile east of the main trap ridge, which extends north from New Haven across the state of Connecticut.

"The Suffield Chestnut Oak has a circumference of fifteen feet two inches, a spread of ninety feet and a height of about seventy-five feet. It is in a healthy condition despite years of neglect and seems not to have suffered abuse. Although in the track of the hurricane of September 1938, it was protected to windward by a nearby hill. So our oak has weathered unscathed the hurricanes of 1938 and 1815.

"For generations this oak has been known locally, for it stands not far from a highway that was surveyed in the 17th century and that was abandoned more than one hundred years ago. These enormous oaks—red, white and black, have been no rarity in Suffield's ancient forests. This particular specimen was called to my attention by Mrs. Henry M. Clark, Jr., of Suffield, a local antiquarian, who discovered it while tracing the route of the ancient highway. It stands on the "Egan Farm" on Stone Street, Suffield, about one mile south of the Massachusetts-Connecticut line at Rising Corners—a farm which is the property of the Hon. Samuel R. Spence, formerly Lieut.-Governor of Connecticut. As long as he lives and retains ownership the tree will not suffer, but it promises to outlive many men. A few years ago he offered to deed this tree and a suitable amount of the adjoining land to the Commonwealth of Connecticut, so that it might be properly protected and preserved, but this offer has not been taken up as yet."

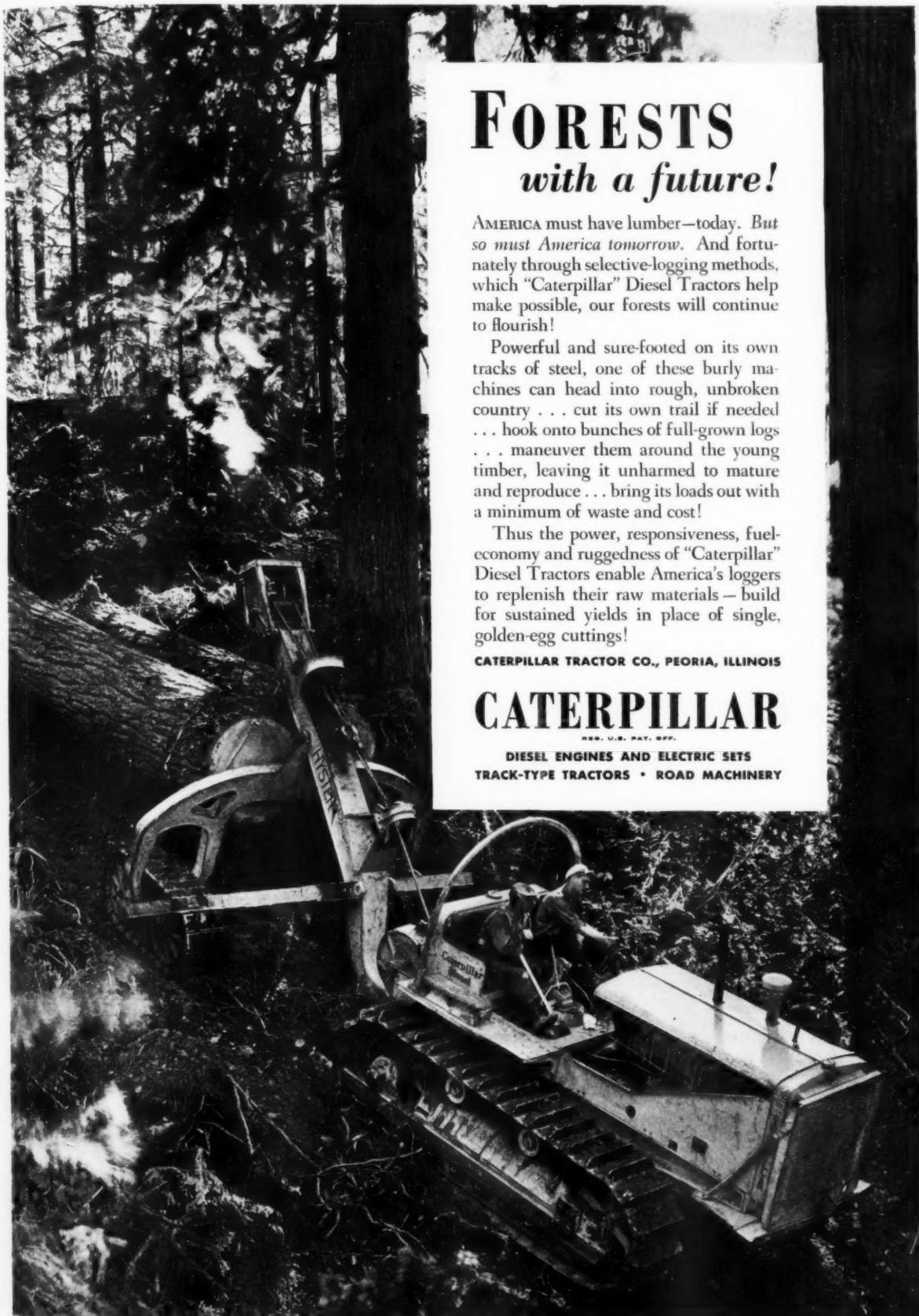
# BIG TREES

## Can You Beat This Chestnut Oak?

The American Forestry Association is sponsoring a national hunt for the discovery and preservation of the largest specimens of outstanding American tree species. Locate, measure and nominate your candidate in this competition. ACT NOW to make known and save the largest specimens of America's trees. For further details, see page 412 of the September issue. Send records and pictures to The American Forestry Association, 919 17th Street, Washington, D. C.



W. O. Filley  
The Great Chestnut Oak at Suffield



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KARL T. FREDERICK

MR. FREDERICK was elected to the Board of Directors in 1937 and has brought to it the benefit of the mature judgment of a man not only brilliantly informed in constitutional law, but one who is a real conservationist and outdoorsman as well.

Born in the Adirondacks, his early boyhood was spent on the shores of Lake Champlain and in the foothills of the Alleghenies. His family later moved to the Finger Lakes region, in Yates County, where his father — who was a Presbyterian clergyman, — taught him to use a shot gun and to fish. He bought his own gun when a boy with money earned working on a farm during the summer.

Entering Princeton University, he was graduated from

## OUR DIRECTORS

there in 1903, returning as a graduate student and fellow in economics the following year and receiving his master's degree in 1904. In 1905 he entered Harvard Law School, from which he was graduated in 1908. During his last two years in law school he was a member of the Editorial Board of the *Harvard Law Review*. Going to New York City to practice, he entered the office of Wilmer, Canfield and Stone. A few years later he was admitted as a member of the firm, which continued until about the end of 1923. After that he practised independently for a couple of years and then formed his present firm of Kobbe, Thatcher, Frederick and Hoar.

His avocations lie in the outdoors. His special hobby is rifle and pistol shooting. A member of the New York State Rifle team at the National matches in 1919, Mr. Frederick went to Belgium in 1920 as a member of the American Olympic Pistol and Revolver Teams and there won the individual pistol championship of the world, and shot on two championship teams. He has been a member of the American Olympic Committee ever since it was organized and has always been much interested in laws which undertook to regulate the use of pistols — particularly the Sullivan Law in New York. He gave a great deal of time and study to the formulation of the Uniform Firearms Act, which has been twice unanimously approved by the American Bar Association and which is now on the statute books of eight or ten States. He was also a member of the National Crime Commission's Committee on Firearms.

He has been for many years a vice-president of the U. S. Revolver Association, a director and member of the executive committee of the National Rifle Association and its past president. An outstanding conservationist, he is President of the New York State Conservation Council, a past president also of the Camp Fire Club of America and past chairman of its conservation committee, a director of the American Game Association, a Trustee of the Association for the Protection of the Adirondacks and a director of the National Wildlife Federation.

## THE AMERICAN FORESTRY ASSOCIATION

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# The EDITOR'S LOG

LAST winter, E. A. McIlhenny of Avery Island, Louisiana, well known in the field of wildlife conservation and a bird-bander of almost thirty years' standing, discovered a new sport. Do not fail to read about it in this issue. If you are not already a bird-bander you'll want to become one.

Although its ultimate object is to provide scientific information for the better management and conservation of bird-life, bird-banding always has had its sports intrigue. Before you can band a bird, you must first catch it alive and unharmed. That in itself is a game of chance calling for ingenuity, patience and anticipation. Mr. McIlhenny not only stepped up the fun tempo of bird-banding but in doing so he increased its contribution to bird lore. To capture and band over 1,100 birds of many different varieties in the course of three and one half months is a record that may well earn Mr. McIlhenny the title "Champion Bird-Bander of 1940."

\* \* \* \* \*

To the banding of ducks and other migratory wild fowl, as intensified by Mr. McIlhenny, the Biological Survey—itself banded a few months ago by Secretary Ickes as the Fish and Wildlife Service—can now offer a new and more exciting field of wildlife tagging. It is in the ranging territory of the bullsnake whose voracious appetite for eggs has branded him an arch enemy of the wild duck. As a piratical raider of duck nests, the bullsnake has few equals. On one of the federal wildlife refuges in Nebraska last year, for example, bullsnakes destroyed forty per cent of the wild duck eggs.

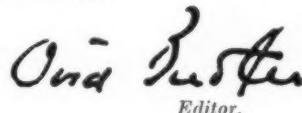
Confronted with this fifth columnist in duck nesting and breeding areas, the Fish and Wildlife Service has set out to learn more about the bullsnake and its undercover migratory ways in order to develop methods of bringing the serpent under control. As with ducks, the Service has adopted the banding technique but instead of using a metal band, it has resorted to the tattoo needle to mark its snakes. A snake, like a duck or a fish, must be captured before it can be banded, tattooed or otherwise tagged. After three years' experimentation two biologists of the Wildlife Service have perfected a snake trapping strategy that last year captured 549 bullsnakes in the Nebraska refuge alone.

From the scientific banding of birds, fish and snakes now being done, we should have answered within a few years how far a duck flies, a fish swims, and a bullsnake glides. But how about that old still unanswered question, "How far can a cat spit?"

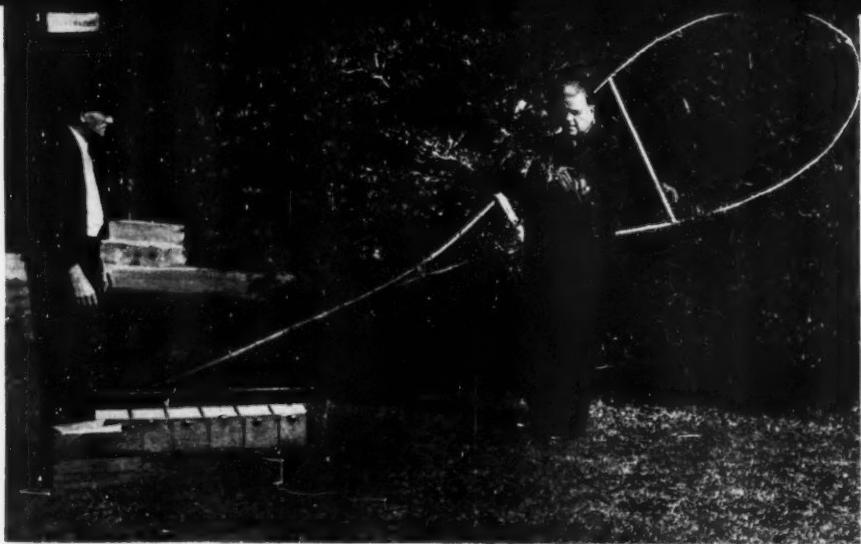
\* \* \* \* \*

Early September brought to a close the Association's 1940 Trail Rider trips into wilderness lands. The summer's program was the most extensive and the most successful of any season since the trips were started. Some 150 people composed the eight parties which rode wilderness trails in the Great Smokies of North Carolina, the Sierras of California and the Rockies of Colorado, Idaho, Montana and New Mexico. Youngest rider was eleven, oldest over seventy. Again no accidents other than bruises were recorded. Two trips into new country were included in this year's schedule—one in the White River National Forest, Colorado, and the other in the Gallatin National Forest, Montana. Old riders who took the latter trip are giving the blue ribbon to the high mountain lakes of the Spanish Peaks and Hilgard wilderness for the best trout fishing of any trip.

It will be of interest to the many Trail Riders who in years past took the trips into the Flathead and Lewis and Clark National Forests of Montana to know that the great wilderness country in which they rode by day and slept under the stars by night has recently been dedicated to the late Robert Marshall, former chief of the division of recreation and lands of the U. S. Forest Service. Mr. Marshall was a leader and exponent of the movement to preserve some of America's remaining wilderness regions unexploited and unimpaired by commercial civilization. In commemoration of Mr. Marshall, the Secretary of Agriculture has changed the name of the South Fork and Sun River Wilderness areas to the "Bob Marshall Wilderness Area." It was in this region that the Association's "Trail Riders of the Wilderness" had its inception in 1933.



Ondrej Tlustes  
Editor.



The author—with his arms full of woodcock—and the net he developed for night capturing and banding birds. On the ground is a six-cell carrying cage, designed to prevent injury to the birds after capture and during the brief time they are held. Right—A close-up of captured woodcock—the most toothsome game-bird in America



Left—The mottled brown and black plumage of Jack snipe offers a perfect camouflage for his protection



Lower left—The band is now in place on the slender leg of this snipe

Below—Meadowlarks—one of the choicest and most attractive of birds—caught at night for banding



# A NEW SPORT

## The Capture and Banding of Birds at Night

By E. A. McILHENNY



The killdeer—not camouflaged by wise Nature, perhaps because it is not good to eat

THE marking of birds by placing light metal bands, properly numbered and recorded, around their legs, is now recognized as holding an important place in the study of ornithology. From the re-taking of banded birds and the recordation of the places where taken, we learn the range, migration, and life span of our feathered friends. Facts in their life history are thus definitely established that could not be learned except by some form of marking individuals.

To secure sufficient return records from which to build up conclusive evidence, there must be banded at one station a great many birds and the work continued year after year for many years. Generally speaking, it is not to be expected that more than one bird out of every fifteen or twenty on which bands have been placed will be recaptured and its capture reported.

The capturing and marking of birds by banding is a comparatively new method of bird study. The first systematic work of this kind was begun with the organization in 1909 of the American Bird Banding Association. This association issued bands to its members until 1920, when its activities were taken over by the United States Bureau of Biological Survey—now the Fish and Wildlife Service. This federal agency has since made available to co-operators in bird banding work a supply of metal leg bands in proper sizes to fit the legs of various species of birds. On each band is a serial number and the words "Notify Biological Survey, Washington, D. C."

When bands are sent to a station-operator, they are recorded in his name, and when the operator attaches the bands to birds, a record of each band number, the species of bird, its sex, and approximate age, and the locality where banded, is sent promptly to the Service in Washington. When a bird wearing a band is taken, the person taking the bird reads the legend on the band, and sends the band to the Service, where a record is made of the taking, and the one who banded the bird notified of the facts of its recovery. Thus, a positive record is made of the banding and recovery of each bird. In the course of time, these records provide a pretty complete picture of the migratory movements of a species.

I first began banding birds in January, 1912, using at first properly marked and numbered strips of pure tin. These were private bands, and although a large number

were placed on birds, principally ducks, not very many were sent back to me—I think largely due to the fact that they were private bands.

In 1915, I affiliated with the American Bird Banding Association, using the bands furnished and recorded by that society, until its operations and records were taken over by the Biological Survey in 1920. Since then, I have placed the Survey's bands on all birds trapped at Avery Island, Louisiana, where I live.

My station has been in operation longer than any banding station in existence. During the last four years, I have banded a total of 99,574 birds, representing more than one hundred species. As I have been actively banding for twenty-eight years, I have handled in that period a vast number of birds, and with the returns recorded of more than 12,000 individuals, volumes of interesting data have accumulated.

The usual method of capturing birds for banding is with various styles of traps, set in trees, on land, or over water, baited with the kinds of food of which the birds to be taken are fond. While a great deal of ingenuity may be exercised in trap construction, and handling, the general method of capturing the birds is the same, and after a few years of application offers little in the way of excitement. It was, therefore, with great interest that I developed during the cold January of 1940 what was to me a new and exciting method of capturing unusual birds for banding—birds that could not be caught in baited traps, including a number of species that I had not before banded.

During mid-January of 1940, there came to Louisiana the coldest weather experienced in more than fifty years. In the Avery Island section there were several days of cold, then a day and a half of sleet. As the ground was frozen when the sleet fell, and the freezing temperature lasted, all foliage as well as the ground was a glaze of ice for twelve days. Insectivorous birds suffered from lack of food and there was great mortality. Certain birds, driven from the north by the cold, came to the Gulf Coast in unprecedented numbers. Wodecock, for instance, were concentrated in a narrow strip extending from the Gulf to about thirty miles inland. This bird, usually shy and resting quietly in thickets during the day, was driven by starvation into the open, and could be seen

almost anywhere on the ground, searching for food by probing under the leaves and dead grass along south-western exposures, where the mid-day sun had melted the earth's icy covering.

After a few days without food, they paid little attention to man, and could be approached so closely that I thought they might be caught with a dip-net, and banded. Unfortunately, this thought did not occur to me until about the end of the cold spell and, as the birds soon recovered their normal strength after the ice melted from the earth, my attempts to capture them in a small, short-handled net were not very successful. I did get a few, however, and these captures encouraged me to persist in my efforts. I then tried shining them at night with an electric headlight, and found that I could see them, but I was not quick enough to catch them with the small net that I was using.

As I lay awake thinking about my failure to catch more of the many birds I had seen and approached quite closely, the idea came to me to make a larger net with a longer handle. The next day, I procured two dry bamboo poles eighteen feet long and tied their butts firmly together every six inches for six feet of their length. At the point where the highest tie was made, I forced between the poles a small block of strong wood. Two feet above this spreader, I inserted a second spreader one and one-quarter feet long. Two feet and four inches above the second spreader, a third spreader was put into place. This last spreader had a length of three feet. As each spreader was put into place, the poles were lashed tightly to each end. With the spreaders in place, the small ends of the poles were bent towards each other, tapered for strength, and lashed together. This procedure produced a brail above the second spreader seven feet in length and three feet eight inches wide at the widest point, shaped exactly like an oval tennis racket. Over the spread portion I tied securely, stretched taut, a fine mesh of linen thread. This gave me a net with a total length from top to bottom of thirteen feet, and it proved most efficient for the use I intended it—the catching of birds at night on comparatively smooth and open ground.

I fitted two of my six-compartment carrying cages for small birds with cloth tops instead of the wire they are usually covered with, put new batteries in my six-cell electric headlight, and fresh batteries in a powerful flashlight, and selecting as helpers two men who are agile and quiet walkers, I was ready for the big experiment of catching woodcock at night.

At seven-thirty the evening of January 27, I picked up my helpers and, loading all the paraphernalia into the back of my car, including my banding box, we proceeded to an open level cattle pasture at the foot of the hills, in the soft ground of which I knew woodcock were in the habit of feeding. It must be known that woodcock are night-feeders, leaving the shade of the thickets, where they rest during the day, as soon as the sun sets, going to open damp pastures, preferably where cattle range, and probing in the soft earth for earthworms, which constitute their principal food.

We had hardly reached the pasture when several woodcock flushed in front of the car. We could see them clearly in the glare of the car's lights, so stopped and made ready for the hunt. Adjusting the headlight, and giving one of the men the hand flashlight, I took the net, while each of my companions picked up one of the carrying-cages, and with lights sweeping the ground a hundred feet or more in front, we were on our way. We had only proceeded a few feet when I saw a woodcock feeding a little way from us. Keeping the bird in the center of the beam from my headlight, I walked quietly

to within about ten feet of it, and dropped the big net over it. The bird did not move until the net touched it, and then could only flutter, as the webbing of the net pinned it down. One of the men hurried up and, placing his hand over the struggling bird from above, held it quiet while the other hand was slipped under the net. The capture was made, and the bird placed in the carrying-cage.

The catching of our first woodcock had been done so quickly and easily that I was highly elated, for I realized my line of reasoning for using the big net was working out in perfect sequence. Within twenty-five minutes from the time the first woodcock was captured, I had netted and placed in the carrying-cages twelve more. We then turned back to the car, so that the captured birds might be banded and liberated. Before we reached the car, three more birds were netted, and a number flushed because of our rapid and incautious haste. I feared the birds would injure themselves bumping up and down, in their efforts to escape, but my fears were groundless, as we found all fifteen strong and unhurt, as the aluminum bands were placed on them and they were liberated. We were soon on our way again, this time taking a different direction from the car, and spotting woodcock almost from the start.

Woodcock were not the only birds we saw, but at first I paid no attention to other species, as I was anxious to band as many woodcock as possible. As the evening wore on and unbanded woodcock became scarce, I began catching other birds: killdeer, meadowlarks, Savannah-sparrows, pipits and jack-snipe. All were netted, and four times the collecting boxes were filled and taken to the car, where the birds were banded, recorded and liberated. The excitement of the chase kept us going until a little past midnight, when I began to tire, and we called it a night. I did not realize until the next morning, when the evening's banding records were footed up, just how many birds we had captured. Then I learned we had banded thirty woodcock, two jack-snipe, three killdeer, thirteen meadowlarks, forty-one Savannah-sparrows and three pipits,—a total of ninety-two birds.

Besides the excitement of finding and capturing these birds, I learned a number of things I had not before known. First, I learned woodcock's eyes would reflect the light (shine), but only when at a distance of more than 200 feet from the light. The fact that the eye of bird or animal reflects light at night is in direct ratio to their ability to see in the dark. The eyes of all mammals (except humans and monkeys), many reptiles, and all insects shine at night, if a concentrated light is projected towards them, and can be seen by anyone carrying a light above their line of vision. If the light is below the line of vision, only eyes reflecting light most brilliantly are visible. The eyes of birds who feed at night reflect light also, and woodcock belong to this category. From the eyes of the other birds taken that first night, not a flicker of light was seen. The experience of this first night's banding was a new and interesting game to me, and I eagerly waited for an opportunity of trying it again.

This came a few nights later, and we were again successful, capturing about the same type of birds we had banded on the first night, but it was necessary to examine every bird caught, as many of them wore bands put on during the first night. As the weather moderately, woodcock moved north, and my last banding of these interesting birds was on the night of February 17th, when twenty were captured. By that time, however, I had succeeded in banding one hundred fifty-four of these uncommon birds, and had learned much of their feeding and night habits.

After the woodcock left on their northern migration, I concentrated my night efforts on Jack (Wilson) snipe. These attractive birds are much harder to capture than woodcock, for their eyes do not reflect light, nor do they feed at night. There were plenty of them in the pastures along the edges of the marshes, where the high land and wet lands join, but it was almost impossible to see them, as they lay close on the ground, and their plumage blended exactly with the foliage of the winter marshes. I soon learned that the best way to get them was to flush one, then follow its flight with the beam of light. This seemed to confuse the bird, and it would, instead of flying a considerable distance, come to earth comparatively near the point from which it had been flushed. By marking closely the spot at which it came down and walking very quietly, it was almost always possible to locate the bird, and then its capture was easy, for the big net was so light and could be moved so quickly that it was rare for a bird seen on the ground to escape capture.

After the first few evenings of netting and banding birds with the aid of my headlight, I became so fasci-



A quick take-off.—as this banded snipe was liberated

nated with the sport that I was out two or three times a week, except when the moon was shining brightly. In moonlight it was much harder to see and get close to the birds, because the natural light dims the artificial one.

There was no thrilling event during the latter part of February, but on the night of March 2 I saw on a level piece of pasture-land, where the grass was very short, a considerable flock of small birds, sitting rather close together. There must have been over a hundred of them on a space not more than fifty feet square. They sat quite still, in small groups, each bird heading towards the center of what appeared to be a rough circle. A closer approach showed the birds to be American pipits. By keeping on the outside of the flock and working around it, I succeeded in capturing thirty-eight of the little fellows, and could have captured more, but I had already a number of birds in my carrying cages, and was afraid of crowding them too closely, so went to the car and banded the catch.

Again, on the evening of March 9, I found the same flock of pipits and captured thirty-eight more of them, besides a number of those I had banded on March 2.

These were the first pipits I had ever banded in numbers, and I was highly elated over my success.

I continued my night-hunting through the month of March, capturing good many of the same species I had before taken, including Jack-snipe, killdeer, meadowlarks and Savannah-sparrows, and, keeping a sharp lookout towards the end of the month (when working the wet lands bordering the marshes), for sandpipers, which I knew were due to arrive from South America during the last days of March or early April. On the night of Marsh 30, my sandpiper search was rewarded by the capture of one stilt sandpiper, one solitary sandpiper, four pectoral sandpipers, four red-backed sandpipers and one spotted sandpiper, besides thirty-five Jack-snipe. I had been getting but few snipe before that date, except birds I had previously banded, and this sudden catch of new birds proved that a fresh supply had come in from across the Gulf, with the first migration of sandpipers. Of course, I was greatly excited at capturing this number of species all in one night, none of which I had ever banded before, excepting, of course, the snipe, and went out the next night fully expecting to make a great catch. Unfortunately, a norther had swept down on the South, with a sudden drop in temperature to the frost point, and it was not until some days later that I was rewarded by finding the marshes filled with migrating shore birds.

As soon as I reached the edge of the marsh on the night of April 14, I knew the shore birds had arrived in quantity. A strong southeast wind had been blowing for several days, backing the tide inland to an unusual height. This high tide, and a hard rain, had flooded the marshes, and covered the low lands adjoining them with a couple of inches of water, producing an ideal condition for the concentration of the many shore birds lately arrived on their spring migration from South America, to their nesting grounds on the Arctic tundras. Almost at once, after leaving my car, I spotted a large plover-like bird alone on a dry part of the pasture, and although it was some distance away, I was sure it was an upland plover. Telling my two companions to stay where they were, I approached the bird so quietly that it did not know danger was near until the net descended over it and it was pinned to the ground. I was so delighted with this capture that we at once returned to the car, banded and liberated the first upland plover I had ever seen at night, and the first I had ever banded.

Naturally, after this first capture, so soon after leaving the car, I expected and searched for more plover, but no such luck, for it was not until some days later that others were taken.

When I reached the edge of the shallow water, shore birds of several species were in sight in every direction. I began operation on a mixed flock of greater and lesser yellow-legs. Other species were in evidence, but the yellow-legs stood up so high and looked so large that I went after them and paid no attention to the smaller species. These birds were standing in water one or two inches deep, and a certain amount of splashing was unavoidable while approaching them. At first, I suppose they thought some of the cattle that used (Continuing on page 464)



1—Coconut Palms



2—Sago Palm



3—Traveller's Palm



4—Gathering Cacao pods



5—A Cacao pod

## TREES--AND POSTAGE STAMPS

THE relationship of trees and postage stamps may seem to be quite distant. But if one were to thumb through an album containing a postage stamp collection, he would be impressed by the frequency with which views of trees are used for stamp designs. Adhesive postage stamps have been used only for the past century. The very first one was issued by Great Britain on May 6, 1840, just a hundred years ago. Today, no civilized country is without them. With the passing of the years, the nations have learned that the pictures on stamps provide an effective means of calling attention to significant features of their countries. It is of interest, then, to note the numerous uses of tree designs and the reasons which have impelled their use on ordinary postage stamps.

Palm trees of various kinds form the greatest number of tree designs on stamps. No less than thirty countries have issued over fifty varieties of stamps using palms for the central designs. Singularly enough, palms are the most widely distributed of all trees, occupying a belt entirely around the world and extending to forty degrees on either side of the equator.

There are several species of palms, the most important being the coconut palm. It grows along the coasts of all tropical countries, and is cultivated for the coconut meat which forms the dried article of commerce known as copra. Its wide distribution results from the character of the fruit which is easily disseminated by the sea. The fibrous husk makes the fruit buoyant, and the leathery skin prevents waterlogging while afloat. It attains its

greatest luxuriance among the Pacific Islands where it reaches a height of sixty to a hundred feet. In addition to its use as a food product, the wood is used for building and furniture; the shell for water vessels; the husk provides fibre for rope, brushes and matting; and the leaves for roof thatching, fans and baskets. Coconut trees have been pictured on the stamps of numerous island countries of the West Indies and the south Pacific, as well as by Congo, Togo, and Mozambique in Africa (Fig. 1).

The date palm is another variety which is commercially important, particularly in northern Africa and western Asia, where its fruit is exported in large quantities. In desert regions it is the most common tree of the oasis. Date palms have been shown on the stamps of Tunis, Tripoli, and Iraq.

The so-called oil palm is not a distinct species, but is a term applied to any palm from which oil is obtained as the principal product. The oil is pressed from the fruit for use in the manufacture of soap, candles, and margarine. Palm oil is exported principally from the equatorial regions of Africa. For this reason oil-producing palms are pictured on stamps of Congo, Dahomey, Ivory Coast, Liberia, Nigeria, Togo, Sierra Leone and Senegal.

North Borneo has chosen to picture the sago palm on its stamps (Fig. 2). Sago, which is a starchy meal made from the fruit of this tree, forms an important article of commerce among the South Sea Islands. This country has also pictured the traveller's palm on another of its stamps (Fig. 3). The tree is characterized



6—Orange Tree



7—Olive Tree



8—Northern Logging Camp

By RAYMOND E. JANSSEN

(Photographs by the Author)



9—Baobab Tree



10—Packing Apples



11—Breadfruit



12—Olive Tree



13—Tropical Balsam



17—Driftwood in Iceland



16—Oak stump sprouting



15—Cedar of Lebanon



14—Picking Tea leaves

by large, long-stalked leaves which spread fan-like from the stem. The leaves have large sheaths at their bases in which water collects in copious supplies. From this has arisen the popular name, traveller's palm.

Because of a slight similarity in names, the cacao tree is often confused with the coconut palm. It is not a palm at all, and its fruit is a pod instead of a nut. Beans occur within the pods, which are borne directly on the trunks and main branches of the tree. The raw product, made from the beans, is known as cocoa. The word is an English corruption of the scientific name, *cacao*. The tree is cultivated in many South American and African countries. It is not surprising, therefore, that it should be pictured on stamps from Togo and Nigeria (Fig. 4), while Ecuador, Venezuela, and Costa Rica, which are the largest producers of cacao, have chosen to show cacao pods on their stamps (Fig. 5).

The earliest stamp picturing a tree was issued in 1868—by the Orange Free State, now a part of the Union of South Africa. Quite fittingly, it pictured an orange tree (Fig. 6). Africa has been a large producer of oranges, and several other countries on that continent have since pictured the orange tree. Other citrus fruits, such as the lime and the grapefruit, have been pictured by Central American countries.

Among fruit trees of wide economic value is the olive. It is native to Asia Minor, where olive oil is produced in great quantities. In 1931 Turkey issued an interesting stamp showing a conventionalized olive tree with its roots extending into all the Balkan capitals, symboli-

cal of Turkish influence in the Balkans (Fig. 7). Events of the present war lend color to this influence! In many northern countries, where wood pulp for the manufacture of paper is produced in enormous quantities, coniferous, or soft-wood trees, are of greatest importance. After being cut, the trees are usually trimmed in more or less temporary logging camps. Whenever possible, the logs are then transported simply by floating them down the rivers to the great mills. Such a logging camp is pictured on a stamp from Newfoundland (Fig. 8).

The baobab tree of the tropics comes into prominence as one of the largest trees, attaining diameters of thirty feet, but it is not great in height. Trunks of these trees are often hollowed out by the natives to form houses. The wood is light, and soft, and the bark yields a strong fibre used for ropes and cloth. The Italian colony of Eritrea has issued a stamp depicting one of these trees. An indication of its size can be obtained by comparison of the man's figure amid the branches (Fig. 9).

New Zealand, which has become a large producer of apples, issued a commemorative stamp in 1936 which depicted the sorting and packing of this fruit (Fig. 10). Several kinds of fruit trees pictured on postage stamps have no importance outside the locality where they grow. One of these is the breadfruit tree. Breadfruit is a staple food in tropical countries where it occupies the position held by cereals in temperate latitudes. It is about the size of a melon, and is usually cooked entire,

the center then being scooped out. Its flavor is similar to that of the potato. It is also dried and made into a flour for bread and puddings. It is pictured on stamps from the British Solomon Islands (Fig. 11).

The olive branch has long been used as an emblem of peace throughout the world. The peace stamp of Japan, issued after the close of the World War in 1919, pictures a dove alighting on an olive branch (Fig. 12). This stamp is credited with being one of the most beautiful ever issued by any nation.

To Salvador goes the distinction of picturing a balsam tree (Fig. 13). This tropical balsam yields a thick, resinous product which is used in the manufacture of perfume. Balsam trees also yield resin for use in varnish, cough medicines, applications for skin diseases and cement for microscope slides. Northern varieties are cut extensively for Christmas trees.

Tea is also the product of an evergreen, but it is really a shrub, growing only from three to five feet high. Black and green tea are produced from leaves of the same



18—Tapping Rubber

plant, the difference being caused by varying the manufacturing process. The knowledge of tea is believed to have been introduced into China from India about 543 A. D. From China it spread to Japan where cultivation began in the ninth century. In recent years Africa has also become a large producer. The current issue of stamps being used in Ceylon shows a native picking tea leaves (Fig. 14).

The famous cedars of Lebanon, referred to in the Bible and used in ancient shipbuilding, are also to be found pictured on stamps. Following the World War, Lebanon was mandated to France, but in 1920 became an independent republic. The first postage stamp designed by this country pictures one of these famous cedars (Fig. 15).

For ages, the oak has been a symbol of the strength and sturdiness which defies time and tempest. Hence, it is not surprising that, in the hectic days following the close of the World War, Germany should have used the oak tree on a series of stamps. It was on the first set of stamps issued by the new German Republic in 1919 that two different oak designs were used. One of these, picturing a live oak stump, symbolized Germany surviving her difficulties. The other shows new shoots springing from the oak stump, symbolizing the rising of the new republic from the stump of the old empire (Fig. 16). In 1936, both Italy and Latvia also used oak tree designs on their stamps.

An oak tree has also been pictured on a stamp of our own United States. This stamp, issued in April, 1935, commemorated the three-hundredth anniversary of the settlement of Connecticut. It pictures the his-

toric Charter Oak, a large tree which formerly stood in Hartford. It was blown down in August, 1856, after having reached an estimated age of about one thousand years. Historical sentiment concerning this tree coincides with the appointment of Sir Edmund Andros as Governor-General of consolidated New England by James II. Andros came to Hartford in 1667 to obtain the surrender of the original colonial charter. The colonists were loathe to part with it, but appearing to acquiesce, brought it to the council. During the meeting, the lights were suddenly extinguished, and in the confusion the charter was carried away and hidden in a hollow of this tree. Presumably it remained there until 1689, when Andros was deposed, and further concealment was unnecessary.

Although many foreign governments have pictured trees and their products from the standpoint of economic use and exploitation, only one country—the United States—has chosen to show the planting of a tree on its stamps. In 1932 a special two-cent commemorative stamp was issued for Arbor Day. It pictures a boy and girl planting a young sapling. Arbor Day was originated in Nebraska on April 10, 1872, by J. Sterling Morton, then a member of the state Board of Agriculture, later United States Secretary of Agriculture. It was made a legal holiday in Nebraska in 1885, and by about one-third of the other states since. About 1882 Arbor Day was made a school festival, and because of such observance the custom has spread far beyond the borders of the United States. From simple exercises and planting of trees, the observance of Arbor Day has become an occasion for impressing upon children the importance of forestry and conservation. The date of the annual holiday varies according to the states. In the North it is observed in April or May, and in the South from December to February. It is regretted



19—Felling Ebony tree

that we are unable to include pictures of these stamps, but a Federal statute prohibits their reproduction in any other than philatelic publications.

In striking contrast to most northern countries, the island of Iceland contains no forests. Hence wood is at a premium here. It happens, however, that Iceland is in the path of the Gulf Stream. Drifting logs in considerable quantities are carried northward by the current, and many of them are tossed upon the beaches of this island, where they are eagerly collected by the islanders. As testimony of this interesting fact, we find a postage stamp which portrays two islanders carrying home a large driftwood log (Fig. 17).

One of the most widely used of tree products is rubber. It was discovered by Columbus on his second trip to South America. He saw the Indians using rubber in their games in the form of a heavy black ball. Three



20—Pandanus or Screw Pine

centuries elapsed, however, before it came into commercial use in Europe. Even then it was not marketed for its elastic properties, but for rubbing out lead pencil marks, hence its common name—rubber. It is obtained from a milky fluid occurring in special tubes throughout various species of tropical trees. This liquid, called latex, contains microscopic globules of rubber. By treatment, the globules coagulate into a doughy mass which, when dried, becomes the elastic solid known as crude rubber. It has been pictured on the stamps of many tropical countries. A stamp issued by Ceylon in 1935 shows a native tapping a rubber tree (Fig. 18).

In regions of extensive forest growth, logging operations occupy a leading position in the commerce of many countries. Among tropical woods, ebony and mahogany are in great demand by the furniture industry, because of their beauty, hardness and durability. The French territory of the Cameroons, formerly a German territory, is a large producer of ebony. It is a heavy, tropical wood, usually black in color. The heartwood is the ebony of commerce, and is used in the manufacture of musical instruments and fine cabinet work. It is on a stamp of this country that we see a picture of a native felling a large ebony tree (Fig. 19).

The Pandanus, or screw pine, is a tropical tree shown on the stamps of Gilbert & Ellis Islands (Fig. 20). It receives its common name from the spiral arrangement of its leaves upon the stem. The tree grows in poor soil, and is one of the first plants to appear upon newly formed Pacific islands. The leaves are used for thatching, and the fibres for hats, ropes, and bags which rival the well-known gunny bags of India.

Among beverage products produced from trees, coffee and tea are, of course, the most outstanding. The coffee tree is an evergreen, growing from eighteen to twenty feet high, and producing a fleshy berry resembling a cherry, from which the so-called "bean" is obtained. The use of coffee is recorded as early as the fifteenth century in Ethiopia. Its physical quality of



21—Branches from Coffee Tree

dissipating drowsiness was appreciated by the Mohammedans in their prolonged religious services. The priests considered it an intoxicating beverage, however, and attempted to prohibit its use. Nevertheless, the coffee habit spread in spite of severe penalties to the users. Up to the close of the seventeenth century, the world's supply came from Arabia. Later its production spread to Java, Africa and Ceylon, and later to South and Central America, where the world's largest supply is now produced. Coffee trees are shown on stamps from Colombia, and branches of the tree on stamps from Haiti (Fig. 21).

In discussing important fruits, the banana naturally comes to mind. Contrary to popular opinion, the banana,

however, is not a tree but is a giant herbaceous plant. It produces an apparent stem up to ten feet in height, consisting of closely enveloped leaf-sheaths which form a large, spreading crown. A true stem grows up through this hollow sheath, producing the flowers and fruit at its tip. The banana is second only to the coconut in economic value among tropical fruits. Prior to the outbreak of the present war, the United States and Europe consumed some fifty million dollars worth a year. Bananas have been pictured on the stamps of many African, Central and South American countries.

Trees, as a means of refuge, have also been pictured on postage stamps. The natives of many primitive countries build their houses in trees in order to be secure from enemies and marauding animals. In 1933 Papua, a Pacific island country, issued a stamp picturing tree houses of the natives (Fig. 22).

Chicle, or latex, the coagulated milky juice of the sapodilla (*Sapota acras*) tree of tropical America, is also a staple article of commerce. First used as a substitute for rub-



22—Native tree houses



23—Tapping and boiling Chicle

ber, or balata, since 1890 it has been imported in increasing quantities almost entirely as a basic ingredient for chewing-gum. The latex is collected, as in the case of rubber, by tapping the trunk. Deep cuts are made for about thirty feet up the trunk, and the juice oozes out and runs down the trunk into a receptacle placed at the base. The flow, lasting for about two hours, amounts to many quarts. The trees are tapped at intervals varying from four to seven years. The raw gum is cooked down in large kettles, after which the semi-solid mass is moulded into blocks for shipment. In making the chewing-gum of commerce, these blocks are remelted, the gum purified and sugar and flavoring are added. British Honduras is a large producer of chicle, and it is on stamps of this country that we see natives collecting and boiling the latex (Fig. 23).

Because trees play such an outstanding role in the life and culture of man, it is not surprising that they have come to be used, along with coats-of-arms, historical scenes, and portraits of rulers and statesmen, as appropriate designs for postage stamps. Following the appearance of the first tree stamp in 1868, more than fifty nations have issued several thousand denominations of stamps picturing trees and tree products. One of the most effective means of calling attention to the value of trees, advertising tree industries, and fostering conservation, has been the comparatively simple idea of depicting trees on the postage stamps which travel every day to all parts of the world.



Two archers with bows of Toxylon—the third, which has been shot, is a lemonwood bow of Indian style—two of the world's best bow-woods

## WOODS FOR ARCHERS

By

A. E. ANDREWS

AS ONE of the thousands who shoot wood with wood to hunt the rabbit, or, when the law protects game, to shoot at the killiwacker, the hodag or the boobar fly, may I say a word about osage orange? We have been taught that Toxylon was its first and significant name, and we know by cash expenditure that it is one of the two highest-priced woods in the world, the other being yew.

When shooting a whammingit, which may be an ancient stump across a ravine, or a boobar fly, which may be a rubber balloon bobbing across an opening before the spring breeze, you may find Toxylon your favorite bow wood. It is one of the three best in the world for us archers. The three are tropical lemonwood, which shoots well but has its faults; yew, which once grew in England or Scotland, then was imported from Italy or Spain, and is now obtainable only from Oregon or northern California; and Toxylon.

My sons and I have made many Toxylon bows, and if you'd look in our basement, you'd find weapons of lancewood (by Aldred of London, England), sassafras, mulberry, yew, ash, lemonwood and red cedar. This last, cedar, would make a fourth of the most excellent woods if it could be used alone, but it fractures and usually must have a backing of hickory, whereas the other three will make self bows.

When my ancestors cut and burned the wealth of walnut and oak and left nothing for rail fences, along came the Toxylon salesman. There was then no woven wire. Toxylon made a thorny fence. One of these old osage rows grows in the Morgan-Monroe state forest of Indiana. I've gone down that row and yearned for a saw. There you find osage trunks, growing in the shade,

where one could get two six-foot logs that would split into bow staves, not to mention the forty-inch cuts for billets to be joined in the bow-handle. When it grows with other trees in Indiana, osage is as straight as a Bowman could wish.

But on farms, the farmers are cutting it and grubbing it out by the roots, though even in our hedge rows, it will produce six-foot logs. In Indiana they have burned enough bow wood in the last two years to arm a thousand archers. In Illinois, where Toxylon keeps the wind from naked soil and fences the livestock, thousands of staves might be harvested. A firm of Indianapolis bowyers offers Illinois staves at \$7.50 for the best, but these are usually made from billets joined in the handle.

In its native range, Toxylon will reproduce. In Indiana, it usually does not. It matures good seed but the squirrels seem to like it. So the Indiana state foresters have been gathering the Indiana seed, raising and planting seedlings in the state forests for game cover. Wherever Toxylon grows, there you will find rabbits and quail, sheltered by the thorns from foxes, cats and dogs. There also you will find the song birds that enrich the summer and serve their economic purpose for the farmer. But outside the state forests, Toxylon in Indiana seems doomed.

The dwindling supply of yew has become alarming to many bowyers. Yew grows slowly. My own yew bow has more than fifty laminae to the inch. The tree from which it came required a quarter-century to grow an inch in diameter. But Toxylon grows much faster. My favorite osage bow has five annual layers to the inch. So it probably will happen that those wishing to make bows

in the years to come will have a choice of lemonwood or osage. The yew of history, legend and romance will be gone and only the centuries can restore it.

But, though sentiment may demand that yew should be the first choice, Toxylon will serve the purpose as well. In a dozen to eighteen years an osage seedling, grown with other trees, will make bows. The best of yew now sells for \$10 or more for the best staves, and staves are sticks six feet long and about an inch and a half square. As a weed, it might be worth saving. Yet yew must be cut with the bark on; it requires the ivory sapwood on its back as a spine to support its powerful heartwood. But Toxylon needs no such backing. A stave from any part of the log will make a bow, but the bark must be removed or worms will eat into the heartwood.

To us, the sapwood of Toxylon is always white, just as the delicate ivory tint of yew is white. But many of us like blood in our osage bows—streaks of red that may be an excess of oil, or a stain of mineral, or merely an evidence of youth.

One osage bow was blood-streaked when worked down so green that the sap oozed out on the scrapers. In seven months that bow was made, seasoning as it formed. In four years the blood-shots disappeared and the bow gained in strength of draw. At four to five years it seemed at its strongest and its color was brown. At the age of ten, it still shoots with a clean, quick, mellow smoothness. Judging by that one bow, it seems that osage will increase in strength of draw for the first four or five years after the wood is cut, but after five years will draw less but become sweeter to shoot.

Toxylon is a wood of beauty and service. As lumber it makes a most lasting and beautiful floor. But of floors I know nothing, being merely an amateur bowyer with nothing to sell you but the idea of having more Toxylon and more yew. The highest price ever quoted me for a single stave of osage was \$20. It could be a source of income on many a farm.

In addition to paying real money for bow woods, archers also are customers for woods for arrows. But we do not know much about woods. Of all our favorite arrowwoods, only a few are used under their definite



A hedge of osage orange in the Morgan-Monroe State Forest in Indiana. One of these trees holds two or three six-foot cuts

names—black walnut, sugar maple, Port Orford cedar, Douglas fir, Sitka spruce, for examples. In many other cases we are loose with our language, speaking of birch, red hickory, pine and the like as if we were using definite terms when, as a matter of fact, we may not know what we are shooting or what we are talking about.

Birch has had an interesting history with the archer. Some twenty years ago, a San Francisco surgeon, Dr. Saxton Pope, wrote a book, "Hunting with the Bow and Arrow," and recommended birch for hunting arrows. After this book appeared, it seems that the birch slabs from sawmills were utilized for dowels and these were sold to archers and professional fletchers for birch. They actually were birch—twisty, warpy birch—of possibly a half dozen species. Meanwhile a bowyer and fletcher in Minneapolis devised his own machine for turning out birch arrows from the heartwood, and these have been excellent. This birch is still sold under the name of the man who turns out the shafts. I have bought them by the hundreds at about a nickel each, but I never suspected what species they might be until a section of shaft was given to a forester friend and he examined it under the microscope, pronouncing it yellow birch.

But is yellow birch the only good arrow wood? A minister friend, going into the trout country of Michigan or the Algoma, often returns with a small log of birch—paper birch, possibly. He skins off the bark and writes to me on it. He splits the log, has it sawed into squares, and works it down into some of the most delightful arrows I ever shot. Russ Hoogerhyde, a national champion by force of habit, shot (Continuing on page 477)



Getting out arrow material from wild cane, which grows in southern Indiana forests

# THE BEAVER - FRIEND OF THE FOREST

By

W. T. COX



NO OTHER land animal has changed the surface of the earth as much as the beaver. Probably no other creature down through the centuries has played so large a part in conserving water and soil and forest. The beaver with his proverbial energy, his provision against "hard times" of winter and his outstanding contributions to conservation might well serve as an emblem of foresight and thrift.

From ocean to ocean, across Canada and the United States, the beaver has been checking erosion along countless streams; he has been holding back the flood waters in thousands of lakes; he has been building up meadows

over millions of acres from which otherwise the rich soil long since would have been washed to the sea. The innumerable flowages above his dams have checked the spread of forest fires and saved untold millions of acres of virgin forest.

In Manitoba, Ontario and other provinces, and in such states as Minnesota and Wisconsin, the forest ranger has learned to recognize the beaver as his friend.

If the replacement of the red man by the white and the extension of civilization were desirable, then we must give the beaver part credit for these changes. It was the quest for beaver skins—valuable and easily transported—that induced exploration by white men and made possible the opening up of the continent to settlement.

The lakes and marshes maintained at suitable levels by beaver dams, from time to time renewed, have been the nesting and feeding grounds for myriads of waterfowl and the spawning grounds for lake and river fishes. The little beaver ponds on the swift trout streams have been the means of conserving these gamey fish through the winters and through periods of low water. People in general are only beginning to realize the immense value of the beaver as the original and by far the greatest conservationist known.

The Indians used beaver skins for clothing and beaver meat for food. They har-



Fish and Wildlife Service

A beaver dam of sticks and mud in the foreground and a beaver lodge in the center. Thus do these small stream engineers play an important part in conserving water, soil and forest

vested a part of the annual increase but did not greatly deplete the number of these animals. With the advent of the fur trader and the white trapper, the beaver was practically exterminated in one region after another until only a few were left in widely scattered districts and in the far north. After they became so scarce in the United States that trappers no longer found it profitable to seek them, there was a period of respite and a gradual increase until in some localities they again became fairly numerous. Then even where protected by law, they became the prey of poachers and their skins the basis of a "bootleg trade." This trade still continues in some of the states. In others, restricted legalized trapping is permitted.

Only in a very few spots has it been possible adequately to protect and manage beavers in the wild state and to obtain reliable information as to their habits and possibilities. One of these was in Itasca State Park and Forest at the headwaters of the Mississippi. Here for a number of years while the writer was state forester of Minnesota, the State Forest Service gave the animals thorough protection and systematically trapped the surplus, at the same time making careful studies of their requirements. It was in this 30,000 acre reservation that we learned the average weight and size of mature beavers, the average number of individuals in a colony, how long a colony occupies the same site and why, how much shore line is needed for an animal a year, what yearly increase in numbers may be expected, how much and what kinds of food are needed and how to trap only male beavers.

Beavers, unlike deer, bears and many other denizens of the forest, to a large extent, make their own environment. They manipulate their surroundings so as to make themselves safer from their enemies, more secure as to their food supply and



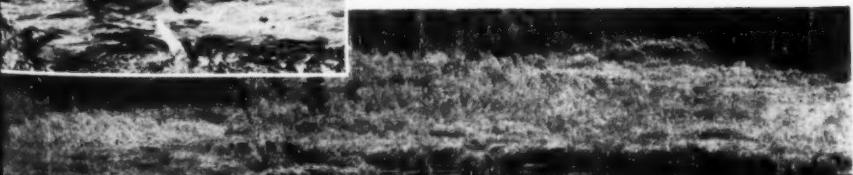
Tirelessly the little fellows work, building up meadows and holding soil which would otherwise wash to the sea

Haynes



B. L. Brown

A major job for such a minor worker — but trees up to thirty inches do not necessarily daunt them



Left — An unusual beaver dam, built of grasses and mud



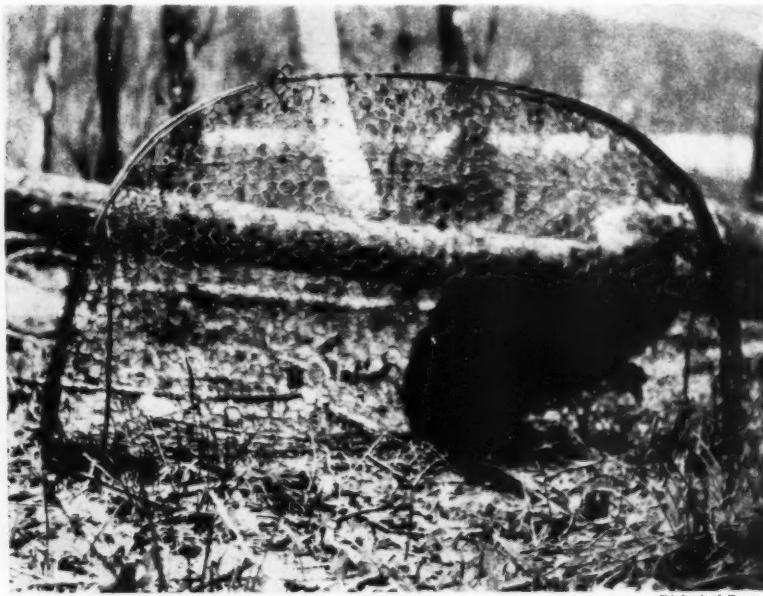
Below — This chap measures the height of his stump — like a good forester!

Fish and Wildlife Service



more comfortable through the winter months. The lodges or houses they build are structures of sticks, grass, moss and mud so put together as to make them strong, warm and roomy enough to accommodate from three or four to six or eight animals. A lodge is usually roughly circular, from ten to twenty feet in diameter, and four to eight feet high. The interior space is of sufficient size to permit a man to creep around on his hands and knees. Oftentimes where a pond has been drained I have found it possible to crawl into beaver houses by way of the regular entrances, which had been under water.

The lodges are strongly built with enough sticks of various sizes and enough mud so that when all the material is frozen on the outside it is exceedingly hard for any animal like a bear or wolf to dig through. Even while unfrozen the structure is substantial and it requires hours of hard work for a man with an ax to cut and dig a way through to the chamber.



Biological Survey

Beavers are taken widely in live traps, for stocking other areas and for breeding purposes, as such traps do not injure the animals

The purpose of the lodge is to serve as a dining room and to some extent as a living room. In front of it, in the water, is stored a pile of sticks and branches, generally aspen, with the bark on, which furnishes a large part of the winter food for the colony. When the ice forms this food of course is frozen in at the surface but the animals come out under the ice, take sticks from the lower portion of the pile and carry them up into the house. There they eat the small twigs and the bark from the larger limbs, after which the peeled sticks are poked out under the ice and may be seen in quantities as the ice melts in the spring.

Beavers build dams in order to hold deep water where they need it for their own safety and for convenience in getting at food supplies such as tracts of aspen timber. The dams also are manipulated so as to maintain a uniform head of water that will keep the houses submerged to the right extent. It is necessary of course to have the water level at the house no higher than the feeding platform inside so that the animals may be above water

while they feed. It is just as important that the surface of the water be well above the under-water entrance to the lodge and bank den because if it became too low the entrances would be shut off by ice and the beavers would starve.

Dams are generally built of sticks and mud with the sticks so arranged and interwoven as to withstand the pressure and action of the water to a remarkable extent. Oftentimes beavers succeed in maintaining tight and substantial dams in sites where engineers find the building of a satisfactory dam very difficult. Occasionally beaver dams have been found constructed of unusual materials such as coarse gravel, bulrushes, and even cornstalks and mud. The animal seems to be resourceful and will use what is convenient and serviceable. Beavers, of course, do not live in the dams.

Streams carrying more than one hundred cubic feet of water a second are seldom dammed by beavers. The

animals seem to know their limitations as to controlling large and turbulent streams. On these they are satisfied with bank dens and are then known to the trappers as "bank beavers," mistakenly supposed to be a different species.

In wide, shallow and sluggish streams and where a marsh seeps across a wide front to a lower marsh one occasionally finds low beaver dams of unusual length, up to a quarter of a mile or more. Dams eight to ten feet in height are not uncommon. In the case of dams six feet or more in height the beavers often cunningly reinforce them by building lower dams immediately below them, thus backing water up against the main dam to give it additional strength.

The bank den is a cave dug out under the dry land but above the water line. The tunnel connecting this bank den with the lodge may be long or short but is low enough in the water to prevent its being interfered with by ice. The den is

usually located under a clump of trees such as a group of alders or willows. This makes it difficult for any predator to do any digging which might enable him to enter the den. Here, warm and dry, above the water but below the surface of the ground and tree roots, the beavers can rest and sleep comfortably even during the very coldest weather.

Bank holes, as differentiated from bank dens, are holes in the bank of lake or stream. In making these excavations, the beavers start digging from well below the water level at ordinary stages. The tunnels lead gradually upward so as to terminate in dry ground and constitute a safe and comfortable retreat for beavers either as a regular abode or for use occasionally by one feeding in that locality. Such holes are made use of commonly by beavers that swim under the ice considerable distances to obtain lily roots and that need a place in which to "come up for air" and to feed. Sometimes a bank hole at a considerable distance from other beaver habitations is used by a female in which to (*Continuing on page 476*)

# MOVES ON THE OREGON CHECKERBOARD

By  
JOHN B. WOODS

THE eighteen interested counties in western Oregon are pleased with the Oregon and California Revested Grant Lands Act of 1937. During the fiscal year 1940 Uncle Sam took in from the sale of O and C timber more than \$800,000. While a part of this gross income represents current payments on account of previous sales, the year's new sales of 590 million feet bear out 1937 prophecies that income would increase. The counties will receive \$600,000, of which one-third is partial payment of deficits accumulated during the tax years 1934-1937,

inclusive. The remainder, which is currently due the counties under the new law, is below the level of annual payments promised to them under the ill-fated Stanfield Act, but substantially more than the amounts paid under that Act for any year since 1930. So the county income definitely is moving upward.

When the O and C bill was under consideration, members of interested Congressional committees were assured that demand for the timber in these forests would increase rapidly. It was pointed out that their favorable location along both sides of a main rail and highway transport route, nearly the entire length of the State, meant that these stands would feel progressively the effects of the inevitable southward march of forest industries. Proponents of the new legislation agreed that liquidation might follow the traditional lumbering pattern of boom and bust, unless the forests could be subjected to sustained yield management. So the counties acquiesced in limitation of annual timber cutting to 500 million board feet, pending determination of a sustainable annual drain figure. But they insisted that sales be increased as rapidly as possible to the allowable figure, and maintained at that level.

In the light of past law and departmental policy, the new Act was revolutionary. Sustained yield management was set up as a definite objective. The Secretary of the Interior was authorized to enter long-time agreements to handle forests jointly with other landowners. Under certain circumstances, he might suspend the competitive bidding requirement by rejecting high bids found to interfere with sustained yield plans. One gentleman of the old school, who had dealt with the General Land

In its April issue of 1936, AMERICAN FORESTS published under the title "The Oregon Checkmate" an article exposing federal mismanagement and resulting dissipation of a great public resource represented by two and a half million acres in eastern Oregon bearing some of the finest and most valuable timber left in America. Originally included in a grant to the Oregon and California Railroad, these lands were recaptured and returned to the Public Domain in 1916 under a ruling by the United States Supreme Court dispossessing the company of its title for violation of the grant.

Forming alternate sections in western Oregon's land pattern, these public properties checker-board that region of mighty forests and, as the article pointed out, control in large measure the type of management possible in protecting and conserving a very large part of the last great reservoir of old growth timber left in the United States. Deeply entrenched politics and departmental inaction, the article charged, was not only destroying the resource but it was checkmating the progress of forest conservation in the Pacific Northwest.

Following publication of the article, Secretary Ickes, whose Interior Department for twenty years had permitted dissipation of these public forests to continue, secured with the help of other agencies the passage of an act by Congress requiring the reclaimed public lands—long known as "O and C Lands"—to be managed for permanent forest production under approved forestry methods. This was in 1937.

Mr. Woods, author of the article here published, recently made an examination of the Interior Department's progress in carrying out the Act. His observations are of special interest not only because of the sincere efforts of the men endeavoring to correct past conditions but because of the importance of the O and C lands to the forest welfare of the Pacific Northwest and of the nation as a whole.—Editor.

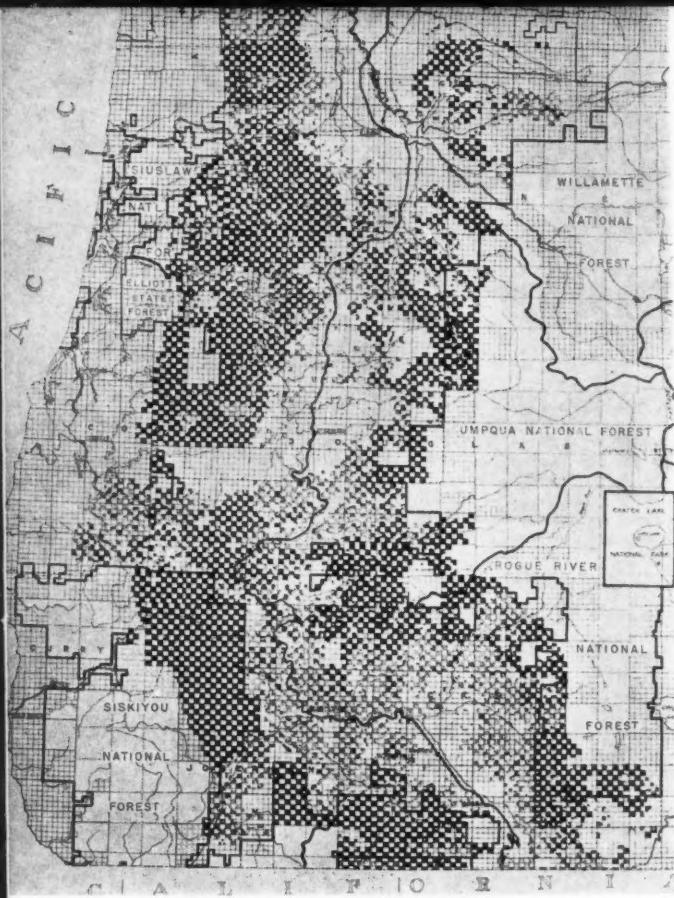
Office for many years, voiced a not uncommon suspicion when he remarked that outside a few smart foresters, nobody in the Interior Department really understood what was in the bill up to the time it became law.

This is an interesting field for speculation, particularly in view of the expressions of pride in the Act now being issued by departmental news sources. Recalling that agitation for overhauling the administration of O and C lands was participated in by representatives of the interested counties, the state of Oregon, the lumber industry, the

Forest Service, and the Interior Department, over a period of some four years, one may assume that everybody affected by or interested in the legislation should have been informed of both objectives and content of the law as finally approved. Still, there may be a few old-timers, in the Department as well as outside, who didn't like the idea of change and declined to be interested.

The American public loves to believe that the Congress can cure any social or economic ill overnight, by passing a law. Yet the signing of the O and C bill by President Roosevelt meant simply that the Secretary of the Interior was directed to proceed with the doing of an extremely complex and exacting task. A new organization had to be set up, capable of handling current business and of planning for the future. He could use for administrative purposes twenty-five per cent of the annual income from sales of timber, if he could persuade the Congress, each succeeding year, to appropriate such a sum. After nearly three years under the 1937 Act, it is reasonable to inquire what progress has been made in putting these lands under sustained yield management.

If a well-financed and intelligently managed private concern, owning 2,500,000 acres of Western Oregon land, had set out in the summer of 1937 to place the suitable portion of such a forest area under sustained yield management, it is quite likely that the fact-finding and broad planning phases would have been completed within two years. That could have been accomplished, even though the owners found it necessary to continue making sustaining sales of timber to established mills,—as did the O and C Administration,—simply by putting enough men in field and office to do the whole job. Private owners



The Oregon Checkerboard. The black and shaded areas, known locally as O and C lands, are remnants of an old railroad grant recaptured by the federal government in 1916. An Act of Congress in 1937 provided for their management as forest lands.

would have saved valuable time in setting up an adequate technical staff; they would have gathered the reins of fiscal control, record keeping, field management and negotiation with buyers quickly into the general administrative hands. They would have determined how much timber should be cut, and where. If the O and C Administration maintains its present rate of progress in developing its organization and carrying on field work and planning, it should reach this starting line by mid-summer, 1941.

The analogy is none too good, because inadequate funds, departmental inertias and other complications and the repetitious steps required by the "democratic process" act as time-consuming brakes upon such a pioneering public agency. Comparison with private enterprise is valuable chiefly to indicate the dimensions of the preliminary task. When the project enters the permanent or joint management phase, where public policy and example may affect, even dominate, the long-time policies of private forest owners and operators, it can scarcely be measured by yardsticks of ordinary business management.

Of course, no one knows how long a time will be required for reasonable working out of an integration process. Neither can anyone guess as to the total acreage which finally may be joined for permanent management with the O and C and other federal lands in the locality. Three formal applications for determination of joint management sustained yield units have been filed by responsible, long-established, forest-owning operators. That a considerable number of mill men, who have purchased

O and C timber in the past, are wondering how long they can expect to be supplied on a hand-to-mouth basis and what alternatives may offer, is evidenced by an increasing barrage of inquiries regarding the joint management prospects in their several operating zones. All this is as it should be, even though the Administration is not yet prepared to make definite long-time commitments.

The work of organizing the new and much larger administrative task has been hampered by limited funds. The Congress has appropriated money for carrying out the provisions of the O and C Act only since June 30, 1938. In fiscal 1938, there had been a direct appropriation to the Forest Service for the protection from fire of these lands and intermingled remnants of public domain; also a direct appropriation to the General Land Office for land classification. These totalled but \$90,000. For fiscal 1939, the Congress granted \$135,000 for management under the Act, including protection from fire, which was contracted for at a total cost of \$74,000. For fiscal 1940, the amount provided was \$160,000, out of which \$80,000 was spent for protection. Next year, notwithstanding a statutory authorization of twenty-five per cent of income, or about \$200,000, the amount available to the Administration will be \$160,000, unless the remainder can be obtained later.

There have been less understandable delays in making appointments and in approving policies. President Roosevelt signed the bill on August 28, 1937. Not until late May, 1938, did the Secretary of the Interior approve appointment of a chief forester in charge of administration. Mr. Walter H. Horning, the appointee, arrived in Portland on June first of that year.

It had been hoped that there would be a lull in the local demand for timber during which the new Administration could perfect its organization, promulgate regulations, and overhaul its sales policy. That hope was futile. Apparently nearly every operator in western Oregon was out of timber and it was necessary to continue making sales, the volume of which increased immediately. Almost the first additions to personnel were cruisers and rangers to handle current sales business. The work of land classification was started in 1938, using a \$10,000 special appropriation included in the annual figures given above. This meant working under a slow bell so far as fact-finding was concerned. But it was the best that could be done. In 1938 Secretary Ickes made available \$25,000 of PWA money for land examination work. Currently \$75,000 has been added to this fund, and by special dispensation, it remains spendable until September 30, 1940. With thirty men now in the woods, it is hoped that field data required for land use classification will be available this fall.

Data concerning timber stand and rate of new growth, both of which are required to calculate sustained yield capacity, are being collected. The required volume of such data is large and its analysis is an intricate job. Much additional work will be required beyond that which can be completed under the present funds.

The Land Office personnel formerly charged with O and C lands administration continued to help. ECW funds and CCC supervisory personnel were drafted into development work. The organization has been added to slowly. At present, besides the chief forester there is a superintendent of timber sales with an assistant, who oversee the activities of four district rangers, each of whom has one or more assistants and cruisers. There is a forester in charge of sustained yield planning, and another directing the over-all fact finding, or survey. Also,

there are two men in charge of CCC administration, and a clerical force.

The number of CCC camps is now five and in addition to lending considerable aid in forest protection upon O and C and private lands alike, they are used for other important purposes. One camp is concentrating on building a usable road into a large 1938 burn to make salvage operations possible. Another camp is engaged in nursery and planting activities on O and C lands. A third camp will begin soon a white pine blister rust control project. The routine task of patrolling these forests against fire is done under contract by the Forest Service, the state of Oregon, and nine private patrol associations.

As a first step in determining the sustained yield capacity of the area and leading up to the matter of local cutting limitations, an effort is being made to divide lands into sustained yield units. The number was first set tentatively at eleven, but probably will run as high as twenty. As soon as public hearings can be held, the Secretary will be asked to approve the boundaries of these units. Thereafter it will be possible to consider each area as a separate part of the whole and once the sustained yield capacity of each unit has been determined, there will be legal basis for joining with private owners in long-range cutting plans and for refusing bids which may be found to violate the objectives of the Act. As in the case of timber sale regulations, which issued nearly a year after the enactment of the new law, determination of units involves public hearings, conferences with interested groups and consideration by the advisory committee. All this consumes time but it is hoped that approval of units and recapitulation of survey data will come out, more or less together, next spring.

The advisory committee is an agency devised to serve as a sounding board for local and private opinion and for federal proposals. Its function is to help steer a true administrative course through uncharted waters. Direct representation is afforded on the committee to private forestry, state forestry, the lumber industry, the counties, the general public and the grazing interests. Matters so far placed before it include the timber sale regulations, the delineation of sustained yield unit boundaries, and a scheme for rating the relative efficiency and cooperativeness of operators working in O and C timber. Under the chairmanship of D. T. Mason, the committee appears to be serving usefully, to the mutual satisfaction of the Administration and interested Oregonians.

Management policy may be summarized in a few words. It is to set up natural sustained yield operating units based upon the O and C forest property, to determine allowable cut for each unit and then to allocate sales of raw material to established operators wherever possible, looking to maintenance of local industrial communities. In the course of time new areas will be opened to development. Similarly the long-time producing en-



Old growth Port Orford cedar—one of the most valuable trees in the O and C forests—with an understory of Douglas fir

pacity of unit areas may be increased by inclusion in the sustained yield scheme of intermingled lands in other ownerships.

Naturally the inauguration of new management was awaited with considerable uneasiness by some operators. They wondered whether there would be an immediate order to enforce silvicultural selection and special slash disposal measures. New logging methods and costly machinery might be required. It was widely rumored that timber would be sold on log scale, as cut, instead of by cruise, a change which would be welcomed by some and opposed by others, according to the character of the unit which each happened to wish to buy.

At present the forest practice rules adopted by the West Coast and Western Pine Associations are stipulated as the minimum standards of (*Continuing on page 478*)

An area logged by a clump selection method, leaving intervening strips of trees



Here a tree selection method was followed, leaving scattered seed trees to start a new forest



# TAKING CONSERVATION



The little school-house at Campaign, Tennessee, in its desolate, barren setting on the eroding hill, before any work was started on the campus



And the same spot after the children started treating and reclaiming their eroded school campus as part of their conservation study

FOR SEVERAL years as I have driven from Nashville to Knoxville I have passed a little school that has attracted my attention. The school building itself is clean, newly painted and rather attractive. It was the school campus that claimed my attention. Never had I seen a more desolate and forlorn spot. Gullies and barren soil extended in every direction. One small pine tree was about the only vegetation on the school ground proper. Along the edge of the highway was a wild jumble of brambles and weeds.

The contrast between the school building and the campus always startled me and I wondered many times what the teachers in that school thought about conservation. Certainly, the finest possible tools for teaching conservation were in their hands, yet the school ground and all its implications had never entered their minds as having anything to do with the training of their children for more useful lives.

Today if one were to pass by the little school at Campaign, Tennessee, the picture I have seen so many times would no longer greet the eye. If it is a clear day chances are that the school ground will be crowded with

children. At first glance one might come to the conclusion that it was recess time. However, closer examination will show that the children are constructing brush check dams and placing cedar matting over the rough, worn soil. The children of Campaign are treating their eroded school campus as part of their study of conservation. At the same time they are visiting their own farms and are for the first time realizing the part the soil plays in their lives. Still later pine trees will be secured from the State Conservation Department and will be planted on the campus by the children in a further effort to check soil erosion.

Van Buren County, smallest county in the State, is situated in the wildest portion of Tennessee's Cumberland Mountains. Over ninety per cent of the county's area is in forest land and much of the area has great scenic value. Working with employees of the Conservation Department, the school authorities of this little county have worked out a unique program of conservation activities—a program which seeks to make the children of the county better able to utilize and manage the wild land of their community.



The children at work, constructing mats over the rough, worn soil where

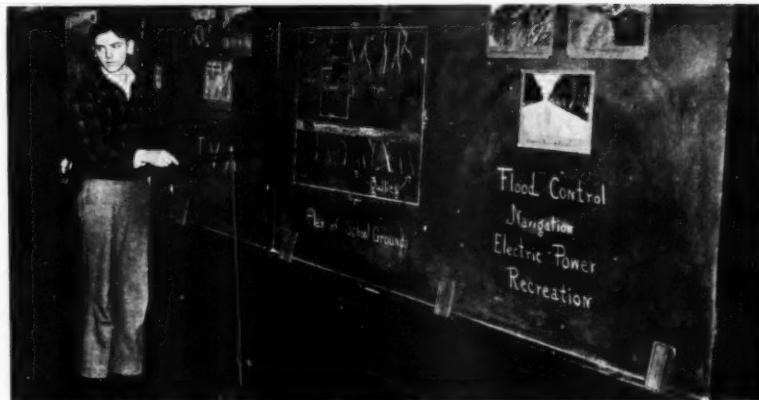
# N TO THE CHILDREN

By JOHN C. CALDWELL

The Van Buren County High School has established a hundred-acre school forest and all students of the school must spend part of their time in this forest studying forestry, wildlife management and even geology. The Cumberlands produce much coal, and so the high school boys who are interested in becoming coal operators practice mining methods on a coal deposit which fortunately is found on the school forest property. Still others quarry stone from a strata of beautifully colored building stone; other boys who expect to go into the lumber business learn how to harvest trees properly.

Thus the boys and girls of Van Buren County study conservation and learn how to properly use the land which some day will be theirs to use—or misuse.

The future is bright for many Tennessee children, for they live in the great Tennessee Valley which through the operation of the Tennessee Valley Authority is rapidly becoming a valley of "managed acres." The great dams and resulting reservoirs are bringing a new world to the residents of the valley. The children of today must become conservation conscious if they are to fit into the world of tomorrow.



Eighth-grade students of forestry and conservation. Many schools have their own forests and over 100,000 trees have been planted in Hamilton County



Conservation is the main theme in many schools and the children are taught to work out their own problems of forest, soil and land rehabilitation



Constructing brush check dams and placing cedar later their program calls for trees

What good will it be to build great dams if the farmers on the headwater streams continue to burn the forests and allow the soil from their farms to silt up the reservoirs? Of what value from a recreational standpoint will these inland seas be if their shores are covered with burned trees?

The educational service of the Department of Conservation is doing all in its power to educate and train the children of the valley. The program of conservation education in Hamilton County, fourth largest in the state, is an excellent example. The city of Chattanooga lies just below Chickamauga Dam and just above Guntersville Dam in Alabama. For the past three years conservation has been the theme of the whole educational program of this county. Every school is visited by conservation speakers and exhibits. The activities center upon soil conservation and forestry, and these things are of vital importance—more so than ever before. Each school ground is surveyed by students in order to find out where gullies need to be stopped and where trees should be planted. After the school ground come the farm homes of the students. As a result of this work during the spring just passed nearly every school in the county has

established a school forest and over 100,000 trees have been planted. These activities have even infected the adults, and never before has there been such conservation interest in Hamilton County!

These are but a few examples of Tennessee's conservation education program, in full swing since 1935. Despite the fact that the State was the first in the Union to pass a law (1921) providing that forestry be taught in its public schools, it has been only during the past four or five years that conservation has been emphasized in the school curriculum. In at least two of the State's largest school systems conservation has been made the main theme during the present school year. The schools of Memphis with its 56,000 children are emphasizing conservation above all else with integration of its principles into the curriculum of every grade.

The new interest in teaching conservation has not come about as the result of any particular textbook or through the passage of a law. Perhaps two factors are primarily responsible. For the past three years the Department of Conservation through its educational service has emphasized the training of Tennessee teachers, not only in the general principles of conservation but in methods of its teaching. Representatives have visited over one hundred teachers' meetings and institutes. Special bulletins have been prepared by conservation men and distributed by the department. Teachers' colleges have been contacted and today all but one of the State's teachers' colleges give courses in conservation. Most of the private institutions also offer courses.

In 1939 the Department, in cooperation with the TVA and the University of Tennessee, inaugurated a full six-weeks' summer course in conservation teaching. The school was conducted at Norris, Tennessee, and courses gave full college credit. As a result of these extensive

efforts, teachers of Tennessee know more about conservation today than ever before. They realize its importance and have begun to give it a place in their teaching.

That leads to the second reason why Tennessee schools and teachers are "eating up" conservation. The law of 1921 provided that the teachers of the fifth grade must teach forestry and conservation. Without interest or preparation they were handed a textbook and told to teach forestry. The idea of teaching in this manner has been discouraged and today teachers of all grades are shown how conservation principles can be integrated with their curricula in no matter what grade they teach. Conservation is given its rightful place in every grade and in science, social science—even in mathematics. In the average high school curriculum there are eight courses that cannot properly be taught without emphasizing some form of conservation. There are possibilities for teaching it in every grade, and in many schools it is being done.

It is estimated that in over 1,000 Tennessee schools students are taking part in some meaningful conservation activities—erosion control, tree planting, extensive field trips. Teachers, too, are going out into the woods to study conservation at first hand. During the past fall the educational service has conducted a dozen tours for teachers. State parks and forests, nurseries, fish hatcheries were visited



The State of Tennessee is grounding its children in a thorough understanding of the vital importance to them of soil conservation and forestry by making these subjects an integral part of the curriculum of every grade

by over 500 teachers. Several trips have been held during week-ends with teachers spending the nights at state park cabins. Conservation "by doing" is the keynote of Tennessee's educational program. In a few short years the results have been most encouraging and with every passing month, more and more teachers appeal to the Department of Conservation to assist them in planning a conservation program for their schools.

Who knows—perhaps where laws have failed for fifty years, intelligent teaching may succeed.

### FOR FORESTRY IN THE PUBLIC SCHOOLS

More than fifty years ago The American Forestry Association was campaigning vigorously for the inclusion of forestry in the public schools. At its meeting in Atlanta, Georgia, in 1888, Mr. Walter D. Smith, a delegate from Connecticut, said: "The question of forestry should be brought in with common-school education. Children can be more easily interested and instructed than older persons." And, at the same meeting, the Hon. B. G. Northrop urged: "Tree and tree planting form a fit subject for the practical oral lessons now common in all our best schools. Every pupil should be thus led to observe our common trees and recognize them. Such lessons would occupy very little time and they would tend to form habits of close, accurate observation of common things which are of vast importance in practical life. Nature is the great educator."

# EDITORIAL



## CHIEF FORESTER

HAS the position of Chief Forester of the United States Forest Service fallen to the low estate of a political job? There is a growing opinion that it has. How else, it is being asserted, can the failure to appoint a successor to former Chief Forester F. A. Sileox be explained?

Mr. Sileox died nine months ago and for nine months the position of head of the most important government agency in the field of conservation has remained vacant. When the vacancy first occurred it was expected Mr. Sileox's successor would be named promptly as has always been done and as efficiency and continuity of administrative leadership demanded. But after weeks and then months went by with no action taken, speculation and conjecture became rife as to why the delay.

According to one report, the President had taken the appointment out of the hands of Secretary Wallace and was withholding action in the expectation of effecting the transfer of the Forest Service to the Department of the Interior at which time he would appoint a Chief Forester of Secretary Ikes' selection. This report lost substance, however, when the Forest Service transfer failed to materialize and still no action to fill the position was taken. Other reports similarly have been canceled out by the lapse of time and action. No explanation for the prolonged delay has come from either the Agricultural Department or the White House. Today the situation remains a greater enigma than ever.

Against this background of inaction and unfulfilled

rumors, it is natural that political implications should now be read into the situation and that opinion should be sharpened by reports that the place was offered to Paul Appleby, who was Mr. Wallace's most confidential secretary; that it was offered to and rejected by Rexford Tugwell, former member of the President's brain trust; and that other men untrained in forestry but of political moment are under consideration.

These reports may be wholly unfounded. If, however, later events prove the political theory correctly based, the Forest Service faces a new and serious threat—that of losing its traditional leadership by a qualified trained forester free of political entanglement. Such a loss would play havoc with its esprit de corps and would weaken immeasurably its strength and unity as a technical and career service.

Furthermore, politicizing the position is of concern and moment to the general public which the Forest Service now serves in virtually every section of the country. It goes without saying that the people of the United States do not want and will resent polities dictating the appointment of their Chief Forester. The fact that this fear is growing and that the inexcusable delay in filling the position with a man of recognized forestry leadership is causing increasing uncertainty, disorganization and inefficiency in the Service calls, we believe, for action—or at least explanation for the delay—by the newly appointed Secretary of Agriculture or by the President.

## A COMMON BOND

AMONG the hundreds of thousands of men, women and children enlisted today in the ancient and wholesome sport of archery, forestry has a host of potential friends. As pointed out by Mr. Andrews in his article "Woods for Archers," in this issue, there is—or should be—a common bond between the archer and the forester. To both, every wood has life and intriguing qualities of beauty, strength, resiliency, personality and even romance. Both archer and forester speak the same language and have the same thrills when they find the woods that provide sought-after qualities. And having found them, both want to see them propagated and maintained in plenty.

But between the two groups, Mr. Andrews clearly feels, there is a gulf. Largely by experience and the fame of renowned bowmen, archers have learned what they know of woods suitable for their bows and arrows. Their best bow woods have become scarce and exceed-

ingly high priced. Toxylon—the lowly, oft derided osage orange, discovered as a bow wood by the Indian long ago,—is one of them. What bow and arrow virtues may lie hidden in many of our other trees, archers do not know and foresters, it would seem, have never been interested enough to find out or to promote the scientific growing of trees such as Toxylon known to possess bow wood qualities. Here, indeed, may be a profitable venture for many a small woodland owner.

Certainly, says Mr. Andrews in effect, we archers need the foresters. If we can't have their warm, active friendship and sympathy, then let us have their abstract cold-blooded help.

By all means let it be the former. Foresters thereby will render a needed service to the cleanest sport that has come to us out of the dim past and they will at the same time win warm friends by the hundreds of thousands.

# BIRDS OF THE YELLOW PINE COUNTRY . . . . .

BY JOHN LINDSEY BLACKFORD

Photographs by Winton Weydemeyer

*WICK-KA, wick-ka, wick-ka, wick-ka*,—the call is that of the jovial red-shafted flicker of the West; and its most appropriate setting is the sunlit, park-like stands of western yellow pine, whose magnificent groves are so characteristic of the foothills and the lower mountain slopes.

Yellow pine country! Bright sunshine, shimmering heat, the redolence of resin, the dry carpet of long, brown needles flooring the great columnar groves, the russet red of mighty trunks, the black and green of moss-hung crowns. How the dreamy days of midsummer return with the thought! And with it, the high, thin, attenuated notes of the pine siskin; fragments of the purple finch's pouring song; a red-breasted nuthatch's busy piping haunts the mind; red crossbills clustering about the lofty cones; a sparrow hawk carrying his rodent kill and speeding down a treetrunk aisle; matching colors, russet and rust upon the boles of the pines.

The friendly *wick-ka* call of the rollicking residenteer of the pine-lands is certain to be followed by his piercing, high-voiced *kleece-ak*, by his wild, staccato notes, or again by his rolling, resonant tattoo as he drums upon some acoustical stub or snag. Whatever his cry, we tread again in memory those far-flung forests of pine that range from southern Canada to northern Mexico, and, represented by three geographical forms in the West, are found in every state from the Great Plains to the Pacific.

No other coniferous association endows the bird student and the nature lover with a more varied, more satisfying picture of its bird inhabitants, or leaves a more lasting nostalgia for its fragrant, sunny aisles than does this noble pine of foothill, plateau, mesa and mountainside. And no survey of its characteristic avian life would be complete without first a brief account of the tree itself.

*Pinus ponderosa*, the type form, occurs along the length of the Rocky Mountains, Cascades and Sierras as the typical tree of the transition life zone. *Pinus scopulorum*, called Rock Pine, matches this range upon the east side of the continental divide, extending eastward into the Black



The male red-shafted flicker—"rollicking residenteer of the pine-lands"—busily occupied inspecting the massive trunk of a colossal Western tree



A dreamy, midsummer day in the yellow-pine forest of Montana—filled with sunshine and shadow, shimmering heat and the aromatic fragrance of resin and of the drying brown pine needles carpeting the floor—perfect environment for the birds dwelling in these magnificent coniferous forests of the West

Hills and central Nebraska. Jeffrey Pine, a third species, flourishes in the mountains of southern Oregon southward to northern Baja California. These are the greatest pine forests in the world; only alpine fir and juniper among conifers enjoy a wider distribution.

A typical specimen is massive, straight-trunked, and, next to sugar pine, the colossus of its family. Great, wide-spreading roots reach out and down, through the loose, well-drained, sandy or gravelly soil the tree loves best. Its widely separated, hugely developed branches stretch out to claim the sunlight, for in maturity it is highly intolerant of shade. Its rounded, narrowly columnar, or pyramidal crown may tower above 200 feet, its diameter reaching eight feet; generally it is less than half the latter. Maturity comes within two hundred years, but not less than six centuries measure the span of extreme longevity. Giant specimens in pure stands demand an acre for each hundred of their number. This is the tree in prosperity and magnificence.

Adaptability, however, is its watchword. Volcanic and

glacial deposits are not spurned; no more are stiff clays, rocky cliffs, and sterile soils, though they may stunt growth and threaten life itself. Ten to sixty inches of rain fall upon the heads of sturdy yellow pine throughout their extensive range, and temperatures from far below zero are endured. Varying qualities of lumber—soft and light or heavy with pitch—reflect the changing conditions encountered in life by the same tree.

Open groves in pure stands are typical; mixture with other conifers and with broadleafs is common. Douglas fir and tamarack are its frequent companions. It混gles with white fir, incense cedar, California red fir, cottonwood and birch, gray and sugar pines.

Cosmopolitan as it may become, the individuality of this great pine is nevertheless best expressed in its own beautiful and picturesque woodlands. Its distinctive features, radically influencing attendant flora, provide for birdlife a unique ecological habitat. Pigeons, wild turkeys, grouse, doves, juncos, and thrushes resort to the spacious ground floor of these forests. Birds of the un-

dergrowth are few, for the clean, acidic forest floor whereon the golden sunshine plays so freely is not conducive to shrubbery. More air and light, more heat and evaporation than in other coniferous woods are the reasons. Less humus accumulates upon the often gravelly or rocky soil which heats up and dries out quickly.

Among arboreal species, numerous woodpeckers and nuthatches are constantly occupied in the inspection of massive trunks and lofty limbs, while Audubon warblers, linnets, purple finches, grosbeaks, and crossbills revel in the foliage. Air feeders include flycatchers, tree swallows, and nighthawks. Birds of prey are varied; a few are characteristic.

When great, white cumulus clouds pile up in the blue that canopies these stately pinelands, enhancing the azure of early summer skies, there is found among the pines a bit of feathered cerulean rivaling in intensity the blue dome overhead—the lovely mountain bluebird. Neither eastern nor western bluebirds might bear the name were color their sole claim; rightfully it would belong to our gentle mountaineer alone. His bright azure and turquoise are a treasure the eye may ever find amid the yellow pines, for he nests regularly in their land. His early arrival in March, soon discovered as he darts out from plumed crowns or drops down to the open, needle-strewn floor, is a token of the blue skies that will follow, of the warm, dreamy hours when summer breezes will sough and croon amid their high branches.

In the transition zone forests of the Cascades and Sierra Nevada, that altitudinal belt lying between the Upper Sonoran zone of the warmer basins and the Canadian zone which embraces the higher, denser and moister forests, there lives the white-headed woodpecker. So marked is the affinity of this chap, whose red cap sits on the back of his head, for his piny habitat that his clothes are nearly always smeared with pitch and his eggs "dotted with pitch and soiled to blackness" by contact with his resin-covered attire. He may usually be observed diligently employed in the search for wood ants in the deep, furrowed bark at the base of this, his favorite conifer.

Of all the wells of music that overflow in spring none rises with greater spontaneity or flows with such unchecked abandon as do the flooding melodies of the purple finch. An outpouring of rapid, variable song, a gushing, sweet medley, a wild, free caroling tells us that the carmine-crowned, wine and rose washed suitor has mounted his airy chancel, or dances ecstatically before his mate. The morning is redolent with the fragrance of the evergreens, the dewdrops flash with prismatic fire, and this dashing minstrelsy tells us that the round of the year is truly begun again in the pinelands.

West of the divide in our northern Rockies, in dense timberlands where yellow pine locks arms with fir and tamarack, the western tanager's scintillant flight arrests our passing. In crimson, black, and gold he darts and swerves down the verdant aisles, or from a lofty conifer's crest renders his jaunty song in swing time. Southward the Arizona hepatic tanager leaves its nest in bordering oak groves to roam with its young through the pine tops.

The foliage of western yellow pine is deep yellowish-green; the long needles, three to a sheath (rarely two, four or five), are clustered in heavy, brush-like plumes at the ends of bare, crooked boughs. These resinous leaves fall in from three to five years, eight or nine in the case of Jeffrey Pine, and the open forest floor in pure stands becomes a clean, pungent carpet that polishes the soles of one's shoes as though they were recently waxed. The yellow, terminal, staminate flower is produced in May. Other twigs of the same tree carry

the dark red, oval scales of the cone flower. The cone or fruit, varying when mature from bright green to dark purple, falls toward the close of the second year after shedding the broad-winged seeds. The prickle-tipped scales of the cones are thick and woody, and having released the nutlets they protect, turn russet or reddish brown.

The red crossbill's divergent mandibles pry apart the sticky scales in order that its scoop-like tongue may secure the seeds at their base. Although the crossbill gleans the bounty of many evergreens, yellow pine is a favorite. In large areas, authorities say, the bird may be found nowhere else during the breeding season. An almost exclusive diet of conifer seeds is given as the reason for its pronounced appetite for salt, an attempt apparently to balance a rich, oily menu.

Other characteristic nesting species of the yellow pine country are two midget woodworkers, the red-breasted and black-eared nuthatches. The latter, less scientifically but better known as the pygmy nuthatch, belies his dimensions in many respects. I have observed a family coming to our winter feeding table, every member of which reversed the general rule that size takes precedence. Quietly, as by mere assumption of right, they took possession of the suet, displacing their combative, red-breasted kin. They instilled such wholesome respect into the larger Rocky Mountain nuthatches, western counterparts of the white-breasted bark climber of the East, that these aggressive fellows actually cooled their toes with such fragmentary patience as they could muster, while, on each visit of the troop, the five pygmies first had their fill. They exhibited far greater affection for one another than did others of their cosmopolitan band, including the chickadees, kinglets, woodpeckers, and creepers. The Rocky Mountain nuthatch himself is a permanent resident of the yellow pine country, yet his occurrence and activities are by no means as limited to it as the other two. Indeed he is to be found in the white-barked pine groves at timberline, the limber pine of lower altitudes, or the deeper forests of Canada. I have seen him at home in the white-bark stands on the trail to Piegan Pass in Glacier National Park, and have watched him climbing alike both trunk of limber pine and rocky rim of roofless lava dome at the Craters of the Moon in central Idaho.

Skimming the lofty roof of the pinelands in swift and reckless flight, shouting as they go, or sitting phlegmatically amid clusters of winged keys that adorn the mountain maples of moister slopes, we glimpse those erratic followers of uncertain urge and fancy, the nomadic evening grosbeaks. In showy patchwork dress of black and tawny, white and chrome, these knightly wanderers seek the mighty timberlands for their nesting.

In the Southwest the Rocky Mountain pygmy owl, a six inch bit of feathered courage, is typical of the pine belt; but in the north, save in winter's coldest months, he favors the denser fir and spruce of the Montane zone.

In the arid states the band-tailed pigeon loves the pine country, especially the borderland where pitch pine meets piñon and juniper. Of wide tastes, but certainly a frequenter of the majestic groves of the pine flats, is the western mourning dove. The sigh of tender love, the hopelessness of overburdening woe have each been heard in its romantic call, depending, it would seem, largely upon the listener and his mood. The turtle dove's whistling flight, its swift, sharp-winged passage along those columned glades are memories one treasures through the seasons.

From the great, cylindrical boles of yellow pine, russet-red and cinnamon brown, comes the wild, untamable,



J. L. Blackford

The black-eared, or pygmy nut-hatch at his nest-hole in a yellow-pine stub—a midget woodworker

primal call of the lordly log-cock,—the wilderness cry of the pileated woodpecker. On the dead, long-seasoned spire of a gnarled giant, the crimson-crested woodsman sounds his ringing challenge. I

have heard his heavy, hollow drumbeat roll out from such a sounding board in a way to suggest the cadence of darkest jungles. That dainty falcon in rufous, rust, and slaty-blue, the sparrow hawk, knows well their spacious parks. His nest in some knothole or other cavity is a guarded secret of the bearded, red-trunked elders of the wood. Screaming, the great western red-tail mounts above the pine hills in tremendous spirals or challenges with his war cry from atop their wooded crests.

The "rind" of young yellow pines differs from that of the tree in maturity. Up to two feet in diameter they may retain the narrowly ridged, dark reddish-brown or blackish bark that gives them the name of blackjack pine. Yet whether the bark is thin or thickly plated, russet or black, it is of little matter to the northern, Rocky Mountain, and white-breasted woodpeckers. These black and white, red-capped craftsmen are the special caretakers of coniferous forests from Canada to Mexico. Their long record of service as nature's foresters should surely win for them our gratitude and protection. The Lewis woodpecker, named for the pioneer companion of William Clark, has achieved certain exploratory efforts on his own account. Although one of the tribe, his heavy-winged flight is crow-like and his dress partly so. The traditional wood drilling activities of his clan have largely been forsaken for fly-eating and ground-searching forays, while flocking is another departure from family custom. His house is the deserted hand-me-down of a professional woodpecker.

In the Rockies, the northern pine siskin is all that his name implies, for he is

a typical breeding bird of the pine forests, whether yellow, limber, or lodgepole. His romping, roving, aerial maneuvers and enthusiastic singing in chorus redeem this happy seed-hunter from the obscurity to which drab dress might consign him. The western wood pewee is another characteristic breeding species of this tree association. We are sure to find the ubiquitous robin breeding here, and commonly the long-tailed chickadee; often the Pacific night-hawk is startled from two speckled eggs deposited in a slight depression amid the long, brown needles and ground cover of the forest floor; Clark's nutcracker hammers the bristly cones for their seeds; the chipping sparrow's shuttling song is heard; the western house wren's bubbling music frequently leads to his nest in a pine grove; the piñon jay is a permanent resident of the pine hills of the prairie region. Often I have heard the saw-whet owl's insistent piping upon the border of the pine country, together with the sometimes tremulous hoot of the northwestern horned owl; and on occasion an Alaska three-toed woodpecker so far forgets himself that he slips down into its domain.

In the Southwest the Merriam turkey is characteristic of the yellow pine belt, as are the poorwill, American magpie, violet-green swallow, and russet-backed thrush. Here too the chestnut-backed bluebird's distinctive colors flash amid the needle-plumed boughs.

*Wick-ka, wick-ka, wick-ka, wick-ka.* The call of the red-shafted flicker comes again from some stately, yellow-scaled tree trunk, and is not to be denied. As he departs in galloping flight down the columned, russet avenues of the towering pines, the "illumination" of his underwings, flaming, we follow him eagerly into that restful land of resinous fragrance.



The Rocky Mountain pygmy owl—six inches of feathered ferocity and courage

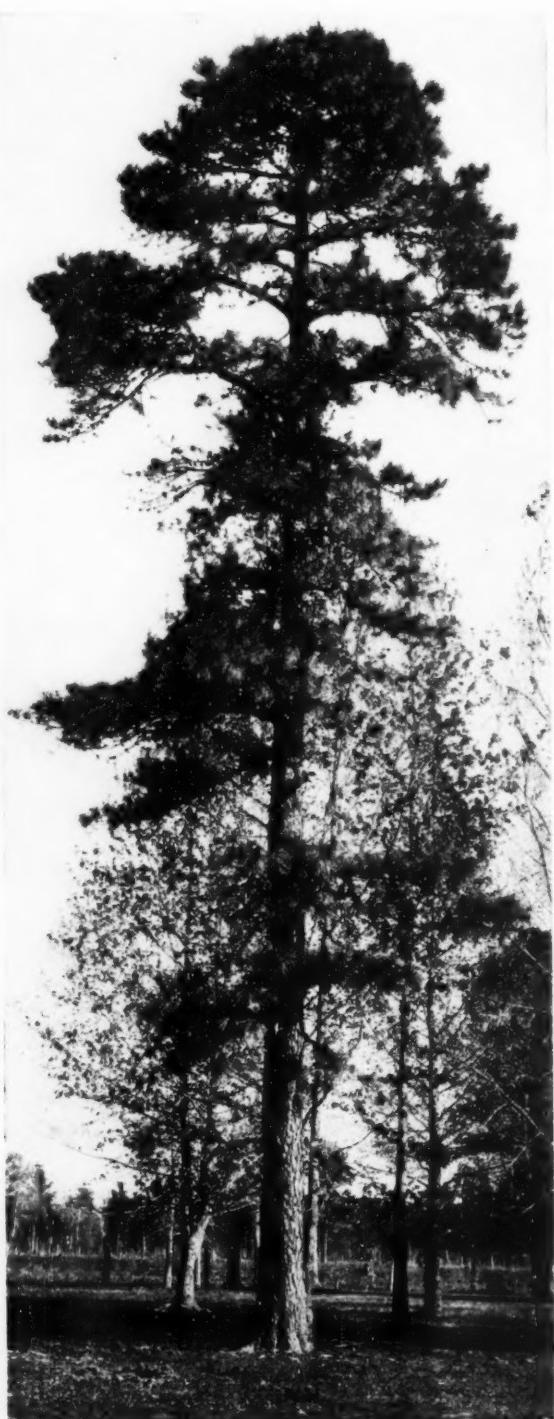


A yellow-pine extends a friendly limb to a war-like Western red-tail hawk

# POND PINE

*Pinus rigida serotina* (Michaux) Loudon

By G. H. COLLINGWOOD



U. S. Forest Service

Pond pine is a relatively small, usually shaggy looking southern hard pine

ONE of the least important of some twenty-two so-called hard pines, pond pine prefers to have its roots in moist, sandy soil. This usually shaggy looking, comparatively short trunked tree inhabits stream banks, the border of ponds, or small swampy areas, as well as undrained peaty soils, and low, wet, sandy flats and islands. Full details of its range are not reported, but it grows from Cape May, New Jersey, southward along the coastal plain to the banks of the St. John's River in Florida and west into southeastern Alabama. Occasionally it occurs as far inland as the eastern edge of the Piedmont Plateau in North Carolina.

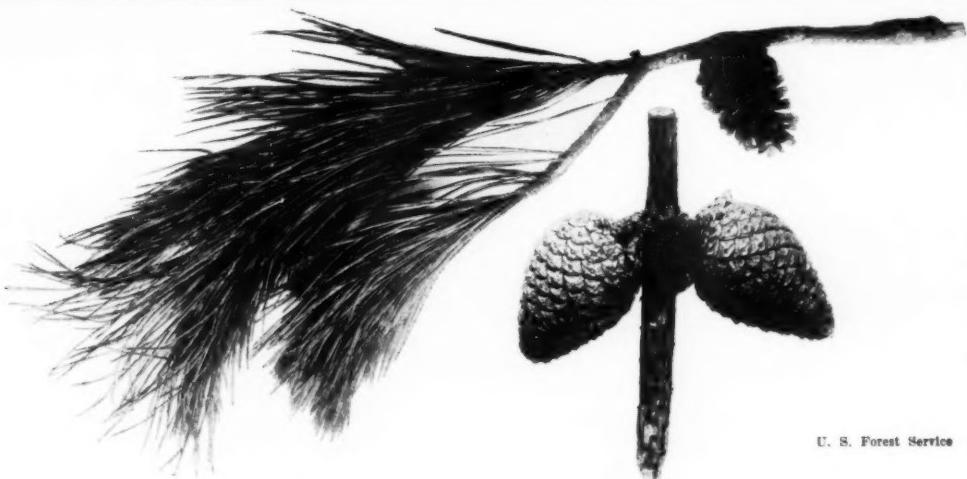
Pond pine bears such local names as marsh pine, bay pine, and pecoson pine. The latter is a local name for a dry swamp. It is closely related to pitch pine, *Pinus rigida*, while the added name *serotina* means "late." This probably refers to the habit of retaining the cones for several years and the somewhat delayed dispersal of seeds. As a result, the first impression made by pond pine on most people is of an irregular crown, overloaded with cones. Many of these, however, are old and empty, so that the tree is not as prolific a seeder as might be supposed.

With trunk diameters of one to three feet, it ranges from forty to eighty feet high. Only under most favorable locations does it approach a hundred feet in height. When grown in crowded stands, the trunk is clean and fairly straight. The stout, sometimes contorted, branches tend to be pendulous at the ends, forming an irregular and open crown or top. The numerous slender twigs are dark green, turning orange in their first winter and brown to almost black by the fourth or fifth year.

The dark, reddish brown bark is irregularly broken by narrow grooves into broad, squarish flat plates of thin closely pressed scales. It is a half to three quarters of an inch thick and resembles that of loblolly pine.

The slender, dull yellow-green needles are in clusters of three, or occasionally in fours. They resemble those of pitch pine but are longer, measuring six to eight inches or occasionally ten inches. Moreover, they are slightly twisted, marked with several rows of stomata or tiny breathing pores on the three faces, and hang on until the third or fourth year. The tendency for the trunk and limbs to sprout bunches of leaves and short twigs is noticeable.

Spring finds the trees adorned with crowded spikes of dark orange staminate catkins while the greenish pistillate ones are borne in pairs or clusters on stout stems near the ends of the twigs. Like pitch pine, many mature cones remain closed for several years while others open during the first fall or early spring. They are reddish brown, turning gray when weathered, two to two and a half inches long, and like those of pitch pine are



U. S. Forest Service

The broadly egg-shaped, red-brown cones are about two inches long, while the long slender needles are usually in clusters of three.

short and broadly pyramidal, or like a long pointed egg. The thin, almost flat scales of the newly mature cones are tipped with a slender prickle which soon drops off.

The seeds are about an eighth of an inch long, nearly triangular, sometimes ridged beneath, and fully rounded at the side. The thin, dark rough shell forms a wide border, and the wings, narrowed toward the ends, are broadest in the middle. They measure a scant quarter inch in width and three quarters inch in length.

Trees growing in close stands seldom bear seed before thirty or thirty-five years of age, but thereafter with fair abundance. The cones often hang on the trees for six or more years, but usually they are empty and seedless. The seeds are, however, credited with retaining their vitality for several years. They germinate readily when they fall on ground which has sufficient moisture. There the young trees quickly take possession of poorly drained and otherwise valueless land, or of open and abandoned pastures and fields. In common with pitch pine, but few others, young pond pine reproduces from stump shoots which appear after the tree is cut or killed by fire.

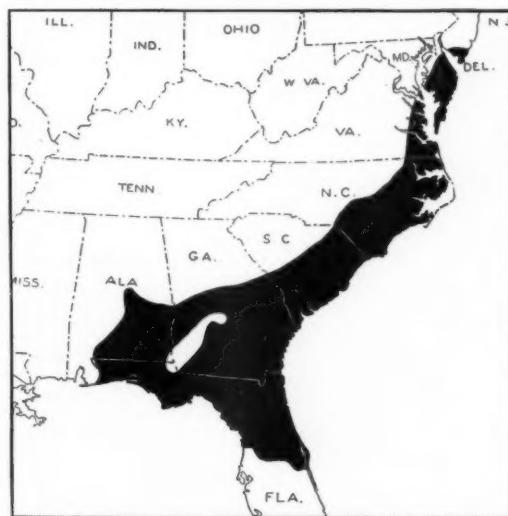
Pond pine trees do not grow rapidly but develop into merchantable timber of fair quality. The wood ranks as medium heavy for pine, weighing thirty-eight pounds to the cubic foot when dry. It is soft, coarse-grained, resinous and brittle, without any qualities of special importance. The dark orange heartwood is surrounded by a wide area of pale sapwood. Its qualities of strength and flexibility are comparable to those of slash pine, pitch pine, and longleaf pine with which the lumber is frequently marketed. It is sparingly used for general construction lumber, small masts for local demands, and for other general uses. When pond pines occur with slash or longleaf pines, they are occasionally tapped for turpentine, often by mistake of the operator.

Like other pines, it is unsatisfactory for shade, but its pleasing foliage and form encourage its use as an ornamental in southern parks where the soil is wet and sandy. Because of its natural moist habitat, it seldom develops a tap root. The wet sites, however, usually offer partial protection from fire. Moreover, it has no severe insect or fungus enemies.



U. S. Forest Service

Many thin, angular plates serve to build up the thin brown bark



Natural range of Pond Pine

## A New Outdoor Sport

(Continued from page 441)

the pasture were making the noise in the water, and paid no attention to my approach, as of course the light on my head hid me completely, but after I had caught four of them and put up the flock that number of times, it was harder to get near enough to drop the net over one of them. Finally, the flock scattered, and I later found them by ones and twos, and had less trouble in getting them than when they were in the flock.

The banding done during the night of April 14 will always be one of my finest experiences in this interesting work, not only for the considerable number of unusual birds banded, but because I banded a number of species I had never before taken. I worked until past midnight and the result was 127 individuals captured. This number included killdeer, meadowlark, pectoral sandpiper, spotted sandpiper, white-rumped sandpiper, greater yellow-legs, lesser yellow-legs, upland plover, and Wilson snipe—the greatest assortment of unusual and rare birds I had ever taken in so short a time.

By now, I was a confirmed night-hunter, and although I continued my daylight banding, I found getting the birds from my traps did not have anything like the exciting appeal that the night-banding gave me, and each day I looked forward to the excitement and mystery of traveling the open pastures in the dark, expecting every minute to see and capture some bird I had not before taken.

Nothing new was taken until the night of April 27, when there showed up in the light beam as I crossed one of the dry pastures, which I hunted nightly, several pairs of dull-red eyes. These, at first, I thought must belong to a family of skunks, as the eyes of these little animals were frequently seen, shining dully as my searchlight swept the countryside cutting a path of light through the darkness. If, however, the eyes had belonged to skunks, they would have been moving about, as these little animals pay no attention to the light beam but go about their business of searching for insects as if the light were not in evidence. Walking towards the group of eyes, I was surprised to find they belonged to night-hawks sitting stolidly on the prairie. I captured fifteen of them in a space not more than fifty feet square.

On May 4, I saw a large bird rise ahead of the car and light a little distance in front of us. Stopping the car and adjusting my headlight was the work of a few seconds, then I turned my headlight down the road and was rewarded by seeing two ruby-red eyes that looked as large as dimes shining in the darkness. Quietly walking to the bird, I recognized it as a chuck-wills-widow. It did not move until the net pinned it to the ground; then it gave out a series of frightened hisses and dull grunts, which continued until it was captured and banded. And I later captured three more chuck-wills-widows and one whip-poor-will. Neither of these species had been banded at my station before.

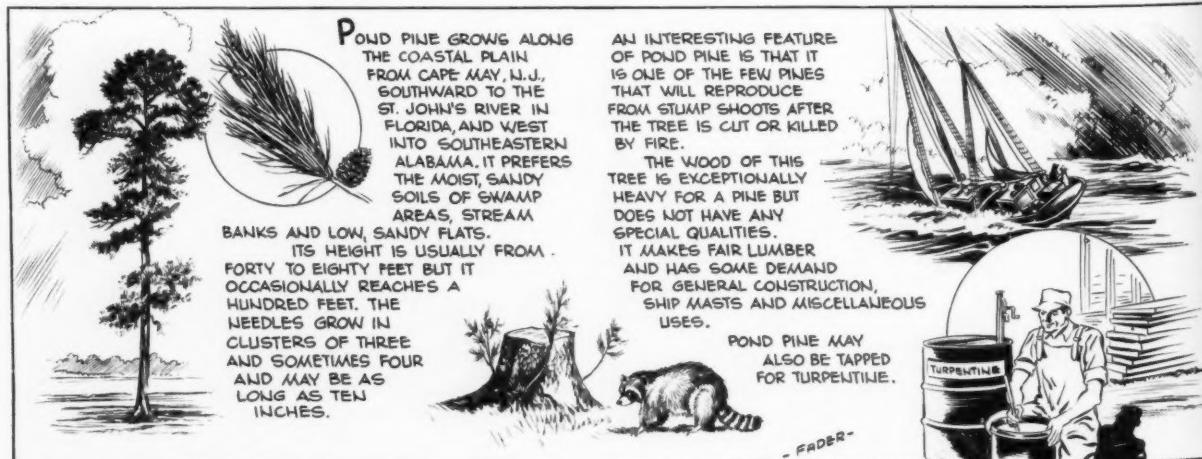
I closed my night banding on the night of May 11, after having hunted birds at night with a headlight twice or three times a week for almost three and a half months. During that time my records show I banded 1,139 individuals, including:

American woodcock ( <i>Philohela minor</i> ).....	154
Wilson's snipe ( <i>Capella delicata</i> ).....	207
Upland plover ( <i>Bartramia longicauda</i> ).....	5
Killdeer ( <i>Oxyechus vociferus</i> ).....	18
Greater yellow-legs ( <i>Totanus melanoleucus</i> ).....	11
Lesser yellow-legs ( <i>Totanus flavipes</i> ).....	25
White-rumped sandpiper ( <i>Pisobia fuscicollis</i> ).....	12
Pectoral sandpiper ( <i>Pisobia melanotos</i> ).....	46
Red-backed sandpiper ( <i>Pelidna alpina sakhalina</i> ).....	7
Spotted sandpiper ( <i>Actitis macularia</i> ).....	9
Eastern solitary sandpiper ( <i>Tringa solitaria solitaria</i> ).....	3
Stilt sandpiper ( <i>Micropalama himantopus</i> ).....	4
Eastern nighthawk ( <i>Chordeiles minor minor</i> ).....	62
Eastern whip-poor-will ( <i>Antrostomus vociferus</i> ).....	1
Chuck-will-widow ( <i>Antrostomus carolinensis</i> ).....	4
American pipit ( <i>Anthus spinoletta rubescens</i> ).....	83
Eastern Savannah-sparrow ( <i>Passerculus sandwichensis savanna</i> ).....	264
Southern meadowlark ( <i>Sturnella magna arguta</i> ).....	224

During this same period, I was operating my traps, and daily banded a considerable number of birds, but the daylight work is now a matter of routine, not to be compared in interest or excitement with night-banding.

A phase of hunting at night with a headlight which adds much to its fascination is the number of animals located by the shine of their eyes. Almost every night I would see the eyes of deer, 'coons, 'possums, skunks, minks, rabbits, frogs and alligators. By close observation, one soon learns to identify the species by the light of the eyes, without ever seeing the body. Truly, banding birds at night is a fascinating game.

## TREES AND THEIR USES—No. 53—POND PINE



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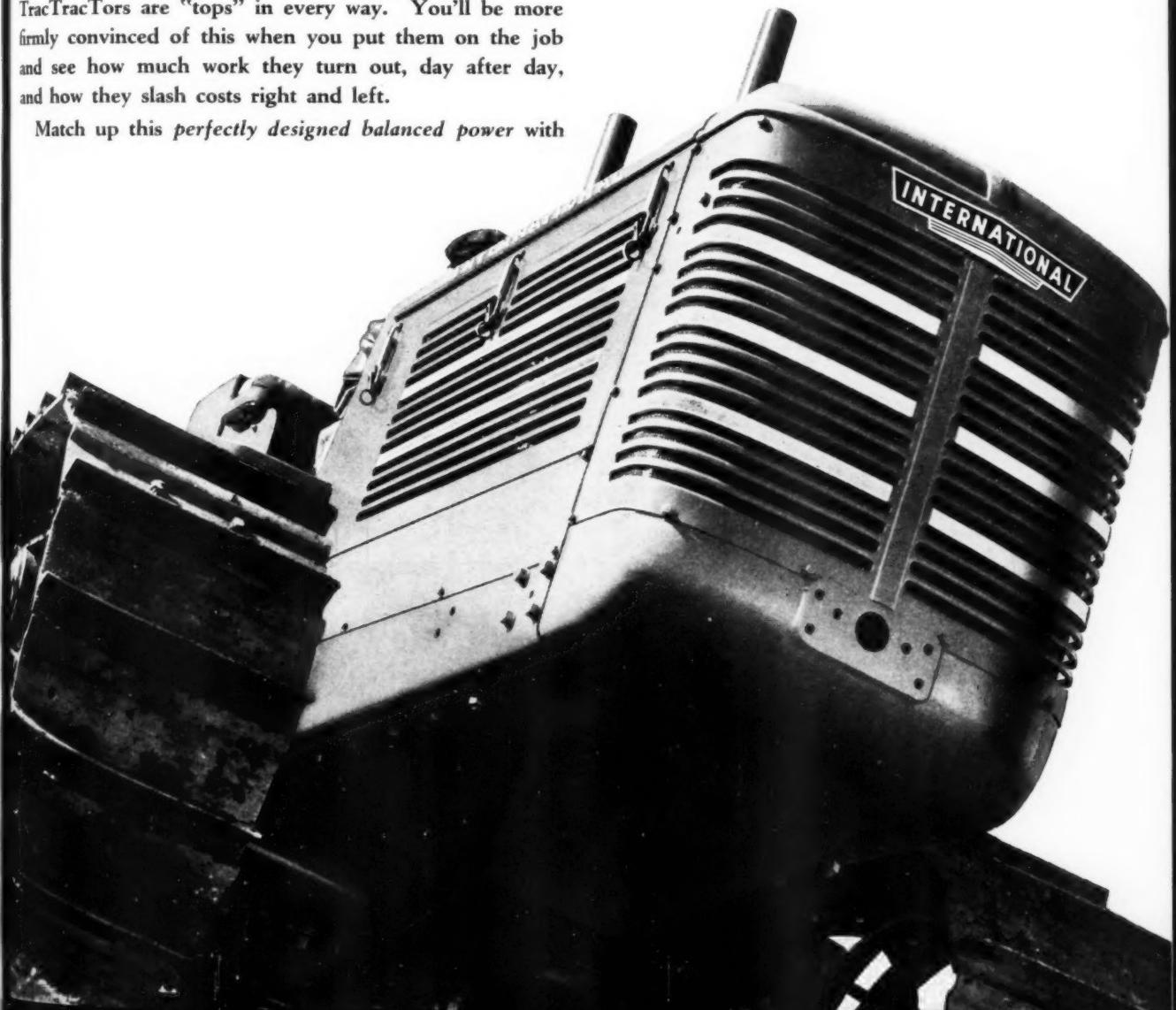
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# INTERNATIONAL Industrial Power



Trees planted on Palmyra Avenue—in one of the low value real estate sections—in 1921, the first contract planting

THIS discussion continues from the presentation of Akron's plan in the preceding, September, issue of AMERICAN FORESTS.

When Akron's street tree plan was initiated in 1926, paving contractors in that part of the country had neither experience in shade tree planting nor the disposition to sub-contract that part of the general contract to qualified nurseries or landscape construction firms. Unit prices for planting and maintenance for three years were called for. Since Norway maples were desired, the trees had to be bought from nurserymen. At least they could not be dug out of the hedgerows and pastures, which had been attempted when American elms were specified. Yet the average price paid for planted trees that first year was \$5.00. It was not due to the general rise in prices alone that the average bid price rose to \$7.00 by 1923, \$10.00 by 1925 and to a peak of \$12.00 in 1927, when planting stopped.

Before the planting season of 1926 had passed, the contracting fraternity had discovered that the planting of street trees could not be entrusted to cheap, unskilled labor and that the simple specifications really were meant to be enforced. I felt that prices were ridiculously low for at least four years or until the \$10.00 unit price was reached, but as is always the case the low prices, particularly on those items of the contract which were always scheduled for construction last, were the cause of much contractor-inspector argument. When the plan was started the contractors bid the tree planting without a bit of attention to cost. It was felt that the bidder could well afford to lose money in the planting if his bid for the paving was accepted. Once a contract was awarded, the successful bidder refused to lose money by the direct method of awarding the planting to a reliable planter at a proper (and higher) price. He would do the job himself. When the job had been completed, the contractor, far wiser now, found himself in possession of fairly reliable cost data, and he bid more reasonably on the next job. In many cases, higher prices prevailing, much

of the planting after 1928 was done by qualified sub-contractors. Despite the fact that higher prices eliminated losses to successful bidders, the contractors never were sold on the plan. They abused the bidding by neglecting to base their prices on prevailing cost, chafed under rigid inspection, neglected maintenance and delayed replacement. Finally by general agreement, and perhaps illegally, all bids for tree planting were uniformly filled in at \$10.00 per unit and later at \$12.00, the park department of the city taking over that item of every contract. In other words, every bid blank for a street paving job that included street trees, was "filled in" at the unit price of \$10.00, or later \$12.00, before the prospective bidder received his forms for bidding, and by general consent no bidder even attempted to change that bid. The tree planting item was eliminated, as far as the contractor was concerned, as one that influenced competition or offered chance for gain or loss. Thus the advantage of specially assessing and collecting the cost of the street trees,

## YOUR SHADE TREES

### AKRON'S STREET SHADE TREE PLAN—II

By H. S. WAGNER

as a small part of the whole cost of paving a certain street, was retained, and the difficulties and hazards of doing the work by unqualified contractors was eliminated. Before two years' use of this scheme had passed the whole program of paving and street tree planting bogged down and ended. It is unfortunate that street tree planting stopped as abruptly as it did, when it had just reached a place where practically all of the difficulties had been ironed out. However, certain durable results remain which can be observed today.

Some opinion of the comparative worth of this plan as against other plans for street tree planting seems to be in order. It will be recalled that, under the Akron plan the cost of the trees was specially assessed on a per front foot basis. The owner of one hundred feet of frontage was assessed twice as much as the owner of fifty feet. Now most of the trees were planted at least fifty feet apart; elms were separated by fifty-five feet. Most lots were fifty feet wide, but many were forty-five feet and some even smaller.



And these are fine specimens of American elms, nineteen years old, on Storer Avenue

Compare special assessment on the front foot basis with assessment on the unit basis, such as is utilized by many cities. On the unit assessment basis the owner whose lot "gets no tree" is not assessed, of course. That owner does secure the benefit of the whole planting in general, the benefit of the simplifying influence of the double row of evenly spaced trees. He gains the more immediate benefit of the trees, which of necessity are very close to his boundaries on either side, and their shade, their framing value. I think that such an owner actually gets the greatest benefit. It is not a fact that he is satisfied to be "cheated out of a tree" just because he is not assessed. In most cases he wants one because his neighbor has one, and even the most capable planner is stumped for an answer that satisfies. Such situations are common everywhere. It is true also that the same owner of a lot whose frontage is less than the spacing of the street trees, where special assessment on a per front foot basis is made, will raise the same objection to being cheated out of a tree when both of his neighbors have trees in front of their homes. This property owner is much more tractable when it is explained that the whole bill is paid on a proportionate basis, because the planting is a matter of general, not individual benefit. Many lots are left without trees directly in front. It is easy to justify proportionate payment of street tree planting because while there is little individual benefit there is actually distinctly general betterment, the cost of which is most equitably spread by the front foot assessment method.

Altogether some 15,000 trees were planted under this plan. Looking at them in 1940, the first impression is that a great deal had been lost by what appears to be total neglect in maintaining them. The inclusion of the words "and care of" street trees in the special assessment section of the city charter might have been invoked to continue the care of this group of street trees beyond the three years when the contractor was responsible. Failure to utilize that opportunity was due to the unwillingness of property owners to burden themselves with additional special assessments when they were already paying previously levied amounts for paving, curb, sewer, etc. And so the trees were left to take care of themselves.

The most unfortunate plantings are those made on the streets where utility wires originally existed and still persist. The relative uniformity of the trees on the one side accentuates,—in the row of ipples cringing beneath wires on the other,—the utter futility of planting with the hope, or determination, that "we'll get the wires off the streets before the trees

grow up that high." There has been no transplanting of pole lines to back lot lines on any of the streets where they stood when trees were planted. There are a good many streets where there are now no poles; they had none in the beginning, because the streets were in planned allotments and the poles are of course on rear lot lines. On several streets wires have been lowered from high cross-arms which were originally well above the young tree crowns, to clusters which are suspended below the lowest branches of the now mature trees. Not an ideal situation, but one to be preferred to many others wherein the trees have been considered not at all. There is no excuse for placing utility wires in streets, and that means in the tree planting spaces, in new allotments.

An inspection of the fifteen thousand trees shows clearly that not enough attention was paid to the distance between the rows of trees. For instance, in the case of the Norway maples which were spaced fifty feet apart in the rows, staggering them on opposite sides of the street, there are narrow streets where the diagonal distances between the trees which are closest but on opposite sides of the street are too small. This was not the result of failure to recognize the necessity for greater spacing. It was a combination of the unwise selection of this species, when another which would tolerate closer spacing should have been specified. There are numerous plantings of European linden on such streets, which are in excellent condition, and this species should have been more widely used on narrow streets.

The dominant preference for Norway maple has not been justified. In fact it is one of the negative lessons of the plan. This species has had a hard time of it in this area. The plantings are not uniform now, although the trees were all carefully selected and nursery grown. Several "types" appear on the same street, and the seven years of abnormally dry weather which came to an end about a year ago have had their effect on these maples. Had better maintenance been practiced, the regular aphid attacks could have been broken up. It is agreed that with good culture the species would rank much higher among all those which were planted here. However, the species as well as the European plane, shows too much evidence of frost cracking in severe winters after late fall wet weather. Three winters ago some forty odd Norway maples in one locality were inspected, all but one or two of which had been badly injured by frost. The splitting peeled the bark off three-fourths of the circumference of the trunks in at least half of the trees, and there

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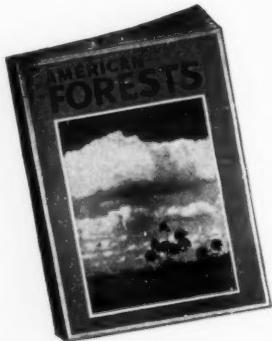
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have been about a dozen fatalities in this group since the time of the original injury. Almost the same situation developed in four rows of European planes, all of which were planted in slightly moist locations, while planes on drier sites did not suffer.

The best results seem to have been achieved by the pin oaks. Every one of the streets planted to this species has a good record of survival and an outstanding uniformly thrifty appearance. The trees are straight and their foliage has good color.

The red oak was not used in sufficient amounts. Such plantings as do exist rank well up to the top, with the pin oak. As is the case elsewhere, the red oak lacks the symmetry of the pin oak. It responds to culture and care, so perhaps it was well that it was not used more in these local plantings, so badly neglected after establishment.

Some of the finest American elms in this country grow in the hedgerows of the farms on our clay lands. Good reason therefore to expect that the elm should make a fine street tree hereabouts. It does. But it is my impression that it should be used only when there is the largest amount of open space, so that it may mature properly. And nothing but trees known to have been propagated from a single source should be planted on any single street. Our plantings include many

types in a single block. Each type has its usefulness but when part of the trees are completely overhung by others in less than fifteen years, an effect is about to be created that cannot be corrected for a hundred years. I am not holding out for meticulously uniform specimens at all, but I do feel that a high degree of type uniformity is necessary in any street tree planting of American elms.

A word as to tree guards. As indicated in the September article, the guards themselves were very expensive and costly to install. In my recent survey of this group of trees I find not one guard. There were vacant spaces, probably less than three per cent of all the trees were missing. I found no posts, either. They were expected to have completed their usefulness in five or six years and actually they did that. Seldom were the guards replaced by setting new posts to hold them. The almost complete absence of injuries to trunks indicates that posts to support the newly planted trees for four or five years would have done the job better and much cheaper than guards and posts.

Finally, we face the ancient problem of acquisition and upkeep. It is unfortunate that maintenance and care have been denied a hundred thousand dollars worth of trees. However, even in their present neglected condition they have already given full value to those who paid, and it is better to plant and neglect than not to plant at all.

## The Sixteenth National Shade Tree Conference

THE sixteenth National Shade Tree Conference, which was held at the Book-Cadillac Hotel in Detroit from August 27 to 30, proved to be one of the most successful in the life of this active organization with over 400 participating. In addition to numerous scientific papers on subjects pertaining to trees and their care, members had an unusual opportunity to get together and talk "shop" and to study some of the fine park and roadside development work for which Detroit and Wayne County are internationally famous. A trip to Dearborn Village was also included as a part of the entertainment.

One of the highlights of the conference was an inspirational address by the famed W. J. Cameron, director of public relations for the Ford Motor Company.

Among the important papers presented at the conference were the following:

"Raising the Standards of Tree Experts," by Frank Hanbury, Peoria, Ill.

"Comparative Costs of Shade Tree Preservation Practices," by W. S. Speed, Columbus, Ohio.

"Nature and Control of Shade Tree Chlorosis," by Keith K. Kreag, Lansing, Mich.

"Wound Dressings," by Dr. Paul E. Tilford, Wooster, Ohio.

"City Forestry Problems," by Paul Sandahl, Des Moines, Iowa.

"Some Troublesome Pests of Conifers," by Dr. J. S. Houser, Wooster, Ohio.

"Diseases of Oaks and Verticillium Wilt of Woody Plants," by Dr. J. C. Carter,

Urbana, Ill.

"Diseases of Shrubby Plants," by Dr. P. P. Pirone, New Brunswick, N. J.

"Application of Surgery to Blister Rust Infected Trees of Ornamental Value," by Dr. J. F. Martin, Washington, D. C.

"An Apparatus for Soil Moisture Determination," by Dr. N. L. Partridge, East Lansing, Mich.

"Photography for Arborists," by H. L. Jacobs, Kent, Ohio, and F. C. Strong, East Lansing, Mich.

Of outstanding interest to all in attendance was the "Plant Clinic" to which members were privileged to bring any problem pertaining to trees and their care. Serving as a board of experts for the forum were ten of the country's leading scientists and arborists. This feature was so popular and instructive that it will be repeated next year when the conference meets at the Mayflower Hotel, Washington, D. C., from August 26 to 29.

Dr. Ernest Cory of the University of Maryland was elected President of the conference for the coming year and Dr. D. S. Welch of Cornell University, Vice-President. Dr. L. C. Chadwick of Ohio State University was reelected Secretary-Treasurer and Dr. Paul E. Tilford of the Ohio Agricultural Experiment Station, Editor.

As in previous years, the entire proceedings of the conference, including all papers and discussion, will be printed and available in a few months through the office of the Secretary.



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## State Body Recommends Against More Cascade Parks

Washington State Planning Council Declares for National Forest Type of Conservation and Management for Cascade Range

In a fifty-seven page printed report recently issued, the Washington State Planning Council, after a study of the natural resources of the Cascade Mountains in that State, recommends against the creation of any additional national parks and for the development and management of its mountain resources under a multiple use plan of conservation.

The Council's recommendations are based upon the findings of a Special Study Advisory Committee, headed by Dr. Robert E. McConnell of Ellensburg, Washington, appointed a year ago. This committee has since been studying the natural resources of the Cascade Range within the state and the various forms of management and use applicable to its resources. A preliminary proposal by the National Park Service for the creation within the range of new national parks aggregating several million acres appears to have directed the committee's study to a comparative appraisal of public land management as represented by national parks and national forests. At the present time the Washington Cascades embrace 8,350,000 acres, of which 6,844,000 acres are in national forests.

Pointing out that the Cascades contain an abundance of resources, including forests, minerals, water, wildlife, grazing, recreation and scenery, the report holds that intelligent use and development of these resources are needed to balance the economy of the state and unqualifiedly

declares for the multiple use principle which typifies national forest management.

"We of the Far West," it is stated, "who are studying the right use of our natural resources, are now working in the light of a new concept of that use. It is called 'multiple use.' The pioneer \*\*\* was of necessity forced to be content with a single use in order to open up a new country. \*\*\* But lately we have come to realize that many uses alike of streams, forests and soil exist side by side. More, we are learning that many of these uses can either be applied so destructively as swiftly to exhaust the possibilities of further usefulness, or can be carried out so constructively that the resource is kept permanently in usefulness and in balance with nature's self-renewing powers."

Referring to a report of the Corps of Army Engineers, outlining a plan of multiple use for the natural resources of the Columbia River, the committee states that the people of the Pacific Northwest have learned "a lesson of transcendent importance" from this report. "Never again," it states, "will our people be content with a program of destructive single use, ending in prohibition of use or the locking up of resources as in a museum. \*\*\* For nearly a generation men have been growing into a realization that true conservation means not prohibition of use, but rather right use, the use that provides for a permanent yield of the richly varied bounties of nature. The nationwide establishing of planning agencies—municipal, state, regional and national—is a recognition of this new concept of the multiple use principle."

Among the Council's specific recommendations are the following:

1. That no additional lands of the Cascade Mountains be converted into use as a national park. Public hearings held by the Council and its committee throughout the state, it is stated, indicate that the people of Washington are well satisfied with national forest management and "are unwilling that there should be any transfer of lands or functions. The West has progressed too far in the development of multiple use practices to return to the obsolete single use principle, save in quite exceptional cases."

2. That both private and public timber within the region be handled under a permanent yield system of forest management in order to provide continuous supplies of lumber, pulp, plastics and other merchantable forest products.

3. That a comprehensive survey of the minerals of the Washington Cascades be made and that prospecting and mining be continued and encouraged.

4. That grazing areas be left open for use under public supervision and control and that wildlife be judiciously managed by state and federal agencies.



## McNary Stresses Conservation

In his speech of acceptance of the Vice Presidential nomination on the Republican ticket, nationally broadcast from Oregon and heard from coast to coast, Senator Charles L. McNary stressed the importance of conservation in the reconstruction and defense of America. He cited the preservation and fuller employment of the natural resources of soil, forest and waterpower as among the "first specifications" of a reconstruction program, and advocated that the government assure the forest resources of the nation better protection against fire, disease and insects by assuming half the cost of prevention. Of the renewal of our forests, he said:

"I come to a problem that profoundly touches my emotions. We stand today in the heart of the last considerable area of virgin forest left in the United States, the majestic remnants of nearly a billion acres of timber that clothed this country when the first Europeans saw it. I was born within sight of the great trees that characteristically dominate the Western scenes from the Rockies to the Pacific. In my lifetime I have witnessed the growth of the lumber industry to its present huge proportions and the expansion of the social and recreational value of our forests. It is but natural, therefore, that during my years in the Senate I have made legislation affecting the forests my special province.

"Every one knows that American timber resources are being swiftly depleted. We take assurance for the future, however, from the knowledge that they may, with care and wise governmental policies, be restored. Happily a substantial portion of our forest lands are being managed and utilized in ways that best safeguard social values, provide maximum employment, guarantee future supplies, stabilize streams and soils and conserve our rich endowments of natural beauty and wild life.

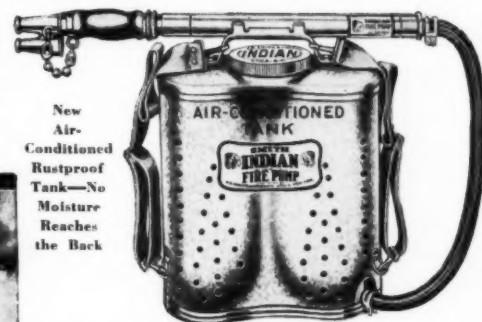
"Yet much more can be done. The Government equitably could assume half the cost of abating loss from fire, insects and disease to the desirable point where forests might become insurable risks. Credit facilities are rudimentary and inadequate. Forest taxation too often tends, by laying too heavy an immediate burden, to compel economic exploitation and forced liquidation.

"Unproductive areas increasingly should be acquired for public ownership and the exploration and research arms of the Forest Service should be expanded. Deserted villages and abandoned cut-over lands are the price society pays for wasteful denudation of our forest areas. The remedy for this ruthless policy is a Government encouraged program of perpetuating this natural resource by regulating the volume of the crop that annually can be harvested. This means balancing the budget between the growth and the cut."



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**FARM WOODLAND COOPERATIVES IN THE UNITED STATES**, by Lawrence Solin, Technical Publication No. 48. The New York State College of Forestry at Syracuse University. March, 1940, 318 pages. Free.

Cooperatives as applied to the management and marketing of farm woods have been much in the limelight of discussion in recent years. Lacking, however, has been any central or comprehensive source of information on the character of these cooperatives, how they operate and their possibilities in the field of farm forestry. This lack the author supplies in a very excellent way by bringing together the best information available at this time.

The first three chapters deal with the fundamentals of cooperation, its place in farm woodland management and experience in both this country and Europe in cooperative marketing of forest products. There follow chapters describing and appraising some of the more important cooperatives now operating in this country with sample agreements and sales contracts used by them. A valuable feature is a bibliography of available material relating to the subject of farm forest cooperatives.

**POEMS OF TREES**, compiled and edited by Wightman F. Melton and published by him at 1205 Emory Drive, N. E., Atlanta, Georgia. 299 pages. Price \$2.00.

This is the latest book of the Sidney Lanier Memorial series, the first of which appeared in 1932. These limited editions, anthologies for lovers of trees and poetry, are published to stimulate a broader understanding and appreciation of the work of Sidney Lanier, "sweet singer of the Southland" and one of America's greatest poets.

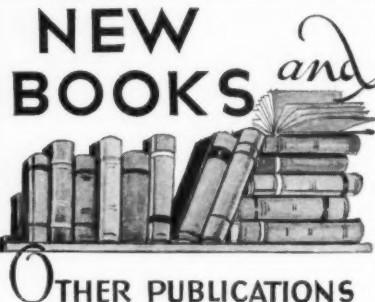
**BOTTOMS UP**, by Max Barsis, is a collection of hilarious cartoons by this well-known Austrian ski instructor,—now living in this country. Designated as "an unreliable handbook for skiers," it will delight every devotee of the sport. Stephen Daye Press, Brattleboro, Vermont. Price \$1.50, and—also published at the same place,—

**THE AMERICAN SKI ANNUAL**, being the official yearbook of the National Ski Association, edited by Nathaniel L. Goodrich. Priced at \$1.00—this is 224 pages of news and articles of intense interest to skiers,—illustrated generously with beautiful photographs.

**HISTORY OF THE AMERICAN GAME PROTECTIVE AND PROPAGATION ASSOCIATION**, by William L. Haskell. Published by the American Game Association, 19 Rector Street, New York City. 67 pages. Price 25 cents.

This is a record of the work done by the Association for the conservation of the wildlife of North America, with credit to the efforts of the leading American men who devoted themselves to this cause.

**FLORA HAWAIIENSIS**, by Otto Degener, 7 Goodrich Avenue, Fieldston, Riverdale, New York City. 330 pages, 127 plates. Price \$3.50.



## OTHER PUBLICATIONS

A list of Selected Books on Forestry and related fields of Conservation is available to members of The American Forestry Association on request.

Published irregularly in loose-leaf form, this is the compilation—as Book 4—of the new illustrated flora of the Hawaiian Islands. Each book contains descriptions of about 100 plants, with full-page illustrations, some done in color, and the distinguished author has incorporated an account of ancient Hawaiian customs as well as something of the geological history of the islands.

**DESERT WILD FLOWERS**, by Edmund C. Jaeger. Published by Stanford University Press, Stanford University, California. 322 pages, illus. Price \$3.50.

Describing and illustrating more than seven hundred desert plants, this is the most complete work ever published on the flora of the far Southwestern American deserts, and offers a complete guide to the flowers, trees and shrubs of that great area. Dr. Jaeger is head of the Department of Zoology of Riverside Junior College. With sketch pad and pencil always at hand, he has been trekking over the Southwestern deserts for many years, and this book is the fruit of his labors.

**IMPORTANT TREE PESTS OF THE NORTHEAST**, edited by Committee on Forest Protection Leaflets, New England Section, Society of American Foresters. Published by the Massachusetts Forest and Park Association, 3 Joy Street, Boston, Mass. 186 pages, illus. Price \$1.00.

In order to furnish up-to-date information on both native and introduced insects and diseases affecting the forests of the Eastern seaboard, a cooperative project was organized to publish brief, authoritative leaflets for forest owners and public officials. Each subject was covered by a recognized authority in his field, and the compilation and publication of this information under one cover is a real contribution in the effort to restore and maintain natural balances and offset destruction by their enemies of the forest and shade trees of the Northeast.

The publications listed below must be ordered direct from the addresses as given and not through the Association.

**Snow Surveys and Irrigation Water Forecasts for Columbia Basin**. Soil Conservation Service, Div. of Irrigation, P. O. Box 835, Boise, Idaho.

**Rainfall Characteristics as Related to Soil Erosion**, by David I. Blumenstock. Soil Cons. Service Tech. Bull. No. 698, U. S. Dept. Agr. Supt. of Docs., Wash., D. C. Price 10 cents.

**Forest Products Utilization in the National Economy**. Compiled by Robert B. Goodman, Marinette, Wisconsin.

**A Study of the Range Habits of Elk on the Selway Game Preserve**, by Vernon A. Young and W. Leslie Robinette. School of Forestry, Bull. No. 9. Published by the University of Idaho, Moscow, Idaho.

**Transplanting Trees and Other Woody Plants**, by A. Robert Thompson. Cons. Bull. No. 5, Nat. Park Serv., U. S. Dept. of Int. Supt. of Docs., Wash., D. C. Price 10 cents.

**Mistletoe and Holly**, by Sophia Prior. Botany Leaflet No. 24, Field Museum of Natural History, Chicago, Ill. Price 25 cents.

**Kudzu for Erosion Control in the Southeast**, by R. Y. Bailey, Soil Cons. Serv., Farmers Bull. No. 1840, U. S. Dept. Agr. Supt. of Docs., Wash., D. C. Price 5 cents.

**Defects Which Reduce Quality and Yield of Oak-Hickory Stands in Southeastern Iowa**, by Charles M. Genaux and John G. Kienzel. Research Bull. No. 269, Central States For. Expt. Sta., Columbus, Ohio.

**Nature Trails and Wildflower Preserves in Virginia**. Wildflower Committee, Garden Club of Virginia, Richmond, Va.

**Stock Water Developments**, by C. L. Hamilton and Hans C. Jepson. Farmers Bulletin No. 1859, U. S. Dept. of Agr. Supt. of Documents, Washington, D. C. Price 10 cents.

**Forest Growth in the Ponderosa Pine Region of Oregon and Washington**, by Philip A. Briegleb. For. Survey Report No. 78, Pac. N.W. For. and Range Expt. Sta., Portland, Ore.

**Influences of Vegetation and Watershed Treatments on Run-off, Silting and Stream Flow**. A Progress Report of Research prepared by the Forest Service and the Soil Cons. Service. Misc. Pub. No. 397, U. S. Dept. of Agr. Supt. of Docs., Wash., D. C. Price 15c.  
**Trees of Santa Barbara**, by Maunsell Van Rensselaer. Santa Barbara Botanic Garden, Inc., Calif. Price 75c.

**Our National Resources**. A brief statement of the facts about these resources and their problems. Published by the National Resources Planning Board, Supt. of Docs., Wash., D. C. Price 10c.

**National Forests in the Southern Appalachians**. Forest Service, U. S. Dept. of Agr. Government Printing Office, Washington, D. C.

## Critical Fire Conditions Extend Into September

FOREST fire conditions throughout the West continued critical through August but were relieved in some sections by rains the latter part of the month and early September. The Pacific Northwest, which has had one of the driest seasons of record, was favored with rain following Labor Day and reported conditions improved. In northern Idaho and Montana, however, fires continued to break out. The forest fuel remained extremely dry and the September 5 Forest Service report from that section stated that conditions were highly hazardous and would remain so for the next ten days. On August 31, a fire broke out on the Lewis and Clark National Forest in western Montana and fanned by a fifty-four mile wind burned over 4,000 acres in one afternoon. It was finally brought under control, however, by a crew of 600 men. This fire was started by a camper who let his camp-fire get away.

According to Axel Lindh, fire control chief of the Forest Service for the northern Rocky Mountain region, which has had almost 3,000 lightning fires this summer, man caused fires became the worst hazard with which fire prevention agencies had to contend following Labor Day and the passing of the summer lightning season. Mr. Lindh issued an appeal to fishermen and campers to exercise the utmost care with camp-fires, matches and smokes. Up to August 20, according to regional forester Evan W. Kelley, at Mis-

soula, 170 fires had been caused by smokers in that region. This was a thirty per cent increase over the number of smoker fires for the entire season of 1939. Mr. Kelley cited one fire as illustrative of the costliness to the public of careless smokers in the woods. This was a fire on the Lolo National Forest caused by a carelessly flipped match or cigarette. To control and extinguish the fire called for a crew of 750 men and a cost of \$14,000.

In California, reports early in September stated that all fires were under control and that fire conditions had improved. Similar reports came from the Intermountain region and the Southwest. In the Lake States the fire danger likewise had lessened although there were some sections that were still considered bad fire spots.

The year's record of forest fires in the national forests of the United States up to August 31, according to the Forest Service, totaled 14,074 fires, of which 9,689 were in the western and 4,385 in the eastern forests. Damages resulting from these fires are estimated at approximately one-half million dollars. In both the East and West the number of fires have exceeded the number for the same period last year but the total area burned over is less. To August 31 this year, it is estimated that national forest area burned, including private lands inside the forest boundaries, amount to 304,000 acres as against 313,000 for the same period last year.

## Community Forests

Sixty-seven new community forests were established in the United States in 1939, and 81,000 acres were added to the total acreage of old and new community forests. Geographically these sixty-seven new community forests were widely distributed—in the South, Arkansas, Alabama, Mississippi, Georgia, Florida, North Carolina and Virginia; in the East and Middle West, Massachusetts, New York, Ohio, Indiana, Illinois, Iowa, North and South Dakota; and in the West, the State of Washington.

Thirty-two of the new forests were organized for watershed protection and timber growing, seventeen for demonstration and study areas for school children, eighteen for a combination of purposes—watershed protection, timber growing, reforestation, wildlife propagation and unemployment outlets. The lands were acquired in different ways. Thirty-one represented a transfer of property already owned by the community. In thirty other cases the land was purchased outright, three were donations and three were secured through tax delinquency.

Wisconsin created no new community forests in 1939, but increased her acreage.

New York with an outstanding record of community forest development has since been organizing an average of twenty each year, and now has a total of 620 community forests on which over 70,000,000 trees have been planted. There are now over 1,500 community forests in the United States.

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## Great Smokies Park Dedicated

DEDICATION of the Great Smoky Mountains National Park, the East's last remaining great primitive mountain wilderness park, was made by President Roosevelt on Labor Day. Secretary of the Interior Harold L. Ickes presided, introducing the two State governors, Clyde B. Hooey of North Carolina and Prentiss Cooper, of Tennessee. In accepting this newest National Park, the President spoke in ringing tones of its deep significance to our national life in these parlous times.

"Here in the Great Smokies," he said, "we meet today to dedicate these mountains, streams, and forests to the service of the American people."

"There are trees here that stood before our forefathers came to this continent, there are brooks that still run as clear as on the day the first pioneer cupped his hand and drank from them. In this Park, we shall conserve the pine, the red-bud, the dogwood, the azalea, the rhododendron, the trout and the thrush for the happiness of the American people."

"The old frontier, that put the hard fibre in the American spirit and the long muscles on the American back, lives and will live in these untamed mountains to give future generations a sense of the land from which their forefathers hewed their homes."

"The winds that blow through the wide sky in these mountains—the winds that sweep from Canada to Mexico, from the Pacific to the Atlantic—have always blown on free men. We are free today. If we join together now—men, women and children—and face the common menace as a united people, we shall be free tomorrow."

"To the free people of America, I dedicate this Park."

## National Defense Lays Heavy Lumber Demand Upon Industry

Demands for lumber to meet national defense needs are falling upon the lumber industry in increasing volume. That government requirements will be met as needed despite the large volume involved appears evident based upon lumber stocks on hand and sawmill capacity. During the World War the United States drew upon its forests to the extent of about six and one-half million feet. What the present demand will amount to is problematical and will depend upon the number of men brought into training, the period of the emergency and whether or not the United States becomes involved in actual war.

It is not now anticipated, however, that present lumber needs will anywhere equal those of the last war. The major requirement of the defense program is for the construction of barracks at the different training camps which are rapidly taking form. According to a recent announcement by John W. Watzek, Jr., in charge of the lumber section of the National Defense Advisory Commission, approximately 650,000,000 feet of lumber will be needed for Army and Navy troop hous-

Newfound Gap, on the State line of the bi-State park, was the site of the ceremonies. Nearby a tablet in rustic setting witnesses that "For the permanent enjoyment of the people this park was given; one-half by the peoples and States of North Carolina and Tennessee and the United States of America, and one-half in memory of Laura Spelman Rockefeller by the Laura Spelman Rockefeller Memorial, founded by her husband, John D. Rockefeller."

This site is fifty-three miles from Knoxville, Tennessee, and eighty-seven miles from Asheville, North Carolina.

From Newfound Gap a highway leads up to a 6,311-foot elevation on Clingmans Dome. This is the highest highway in the East. From the end of the highway a trail goes on to the top of the Dome—elevation 6,642 feet.

The Great Smoky Mountains National Park when completed will rank as fifth in size of all national parks in continental United States. When acquisition of all lands within the park area is completed, it will comprise approximately 463,000 acres—an area of 723 square miles.

The Great Smokies are the greatest mountain mass east of the Black Hills of South Dakota. Many of the peaks are more than 5,000 feet in altitude, and sixteen are over 6,000 feet. In visible height they compare favorably with 14,000-foot peaks in the Rockies, since the latter rise from valleys and plateaus themselves from a mile to 8,000 feet in height. To really see the Smokies at their best, visitors can go afoot or on horseback over some of the more than 500 miles of trails.

In keeping with its policies of conservation the National Park Service expects to preserve the historical as well as the wilderness features of this fastness of the Southern Appalachians.

ing which has already been started or for which plans have been completed. Since this announcement additional training camp projects have been approved or are in course of approval which will call for several hundred million feet of additional lumber. Speed in providing housing facilities at the training camp is essential and when this issue comes from the press national defense lumber may be moving in large volumes. It is said that lumber for training camps is estimated on the basis of sixteen feet for each soldier.

To aid the government in procuring the large volume of lumber and other forest products needed for national defense, industry has organized a Lumber and Timber Products Defense Committee representing the entire timber industry. This action was taken late in August when representatives of some fifty organizations of lumber and timber manufacturers and distributors met in Washington at the call of M. L. Fleishel, President of the National Lumber Manufacturers Association. At this meeting a five-man executive committee was selected to head the industry's defense group.

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have her young, seemingly hiding out for the occasion after which, when the young are large enough, she moves with them to the lodge.

The summer food of beavers includes a considerable variety of plants, many of them succulent, herbaceous species but including also woody plants, both trees and bushes. Water plants of several kinds are taken. In the autumn an increasing proportion of their food consists of twigs and bark of trees and bushes and as winter comes on their diet is further restricted to aspen, alder, willow, cottonwood, birch and other tree species the branches and stems of which are stored as previously stated, in piles in the water close to the lodge or occupied bank hole.

The distances that beavers will swim under the ice in winter seems almost incredible. They are known to have crossed lakes by swimming under the ice for more than half a mile. On such trips they come up close to the ice and exhale and then inhale again, recapturing most of the air from the "bubble" formed against the ice. Whether or not the air is thus partly recharged with oxygen is not definitely known. It is certain, however, that beavers can remain under water for as much as ten or twelve minutes at a time. In this connection it is noted also that while the lungs of the beaver appear small in comparison with the bulk of the animal, the

liver is very large and has provision for storing quantities of oxygenized blood.

A dam, if at the outlet of a lake, may be maintained for many years and lodges around the shore of the lake may be dependent on the dam for maintaining the right stage of water to make them habitable. On small ponds and streams and especially on ditches, a dam may be maintained for only one or two seasons, after which it is abandoned because the food available from the shore or bank has become depleted. On small streams or ditches with a limited amount of water the beavers will sometimes move down stream, build a new dam and deliberately open the old dam to furnish additional water to the new site.

Erroneous ideas are prevalent as to the number of beavers inhabiting a lodge or "colony." These misconceptions are due to two facts: first, that one beaver does a surprising amount of work in a night. Second, that a dozen beavers or more may occasionally be trapped from one lodge or dam. I have known a single pair of the animals to gnaw down several large aspen trees more than a foot in diameter in one night, cutting up the trunks into sections and dragging portions of them, as well as the cut-up tops, into the water. The trapping of more than five or six of the animals at one lodge is accounted for by the fact that they appear to do considerable "visiting around," especially on a lake large enough to have several lodges along its bank. Also, on some lakes, they bunch up to some extent late in the fall in the more attractive lodges.

The maximum size of trees cut down by beavers is a question often discussed and on which persons are prone to disagree. In some districts one might study the animals and their work for many years and never see an instance of their felling a tree larger in diameter than twelve or fifteen inches. In other places, it is common to find trees twenty-four to thirty inches in diameter felled by the beavers. I myself have measured beaver-felled aspen trees that were twenty-seven, twenty-eight and three-tenths and twenty-eight and six-tenths inches in diameter above the stumps. This was in the Nelson River country of Manitoba and in the upper Rainy River District.

The average mature beaver weighs almost exactly fifty pounds. This is based on the actual weighing of 102 mature beavers caught in trapping operations during two trapping seasons. Of this number several weighed over sixty pounds.

The maximum number of beavers that a district will support is best computed on the number of miles of stream, ditch bank, lake and wet marsh shore line. One-sixth of the mileage only may be considered since it requires about six years for the replacement of the food supply by natural growth. Beavers ordinarily eat out the available food at one site in about two years and then move to a new place. Aspen and other food may be considered

available if it is growing not more than fifty yards back from the water. The animals, being slow and somewhat clumsy on land, do not care to venture much beyond this distance from water and safety to fell trees and to forage for food. The requirements of one beaver based on measurements of cuttings made at Itasca equals two and three-fourths cords of woody material a year.

Beavers are hardy animals. They appear to have few diseases and rather few predator enemies. Wolves, coyotes, bobcats, lynx, eagles and bears occasionally catch a victim. Otters may trouble them to some extent, though I have found beavers and otters living side by side within a few rods of each other and rearing their young.

There is considerable mortality, however, among young beavers and many colonies suffer heavy losses through natural causes such as changes in water level during the winter or by floods preventing the storage of food. Beavers travelling across country from one lake to another may be caught by wolves. Sometimes a tree as it falls crushes the animal that felled it, for, contrary to common opinion, a beaver does not know which way a tree is going to fall. Trees cut down by beavers usually fall toward the water, but that is because the trees naturally lean in that direction. The incisors or large, gnawing teeth keep growing from the base and these teeth sometimes break in such a way as to grow long and misshapen, thus preventing the wearer from closing his mouth and either swimming or eating.

From two to eight young are born in a litter and only one litter a year is produced. From the data I gathered at Itasca it would appear that about a forty per cent increase a year may be expected. This allows for normal mortality among both young and old animals. Some of the younger females have litters later in the season than the old ones and such litters are small—two to three young only.

During the period a beaver population is being brought up to safe numbers only male beavers should be caught. The manner of taking males was worked out at Itasca during the years of intensive management. It was there found that the old males travel a great deal in the early spring, while the females remain in the lodges. Traps set at considerable distances from lodges and at crossings from one lake to another almost invariably caught only males.

Beavers do not belong in thickly settled communities, since their flooding operations may become too troublesome to meadows and roads. In the wild forest country they do little harm and an immense amount of good. Most of the complaints made about damage from beavers are but slightly if at all justified. While state forester of Minnesota, as commissioner of conservation, and as superintendent of the United States wildlife refuge on the Mississippi, I investigated scores of complaints and found that the motive behind them in more than ninety per cent of these cases was to obtain the privilege of trapping the animals in the hope of profiting from the sale of the pelts legally or otherwise.

Once in a great while beavers may interfere with roads in the forest country. Again they may flood a tract of valuable spruce or cedar timber. There are instances where by making large, wide flowages they may cause a trout stream to become too warm for the fish. These are rare instances, and can easily be controlled by the rangers or wardens. It is easy to prevent beavers from holding too high a head of water. The simplest way is to insert pipes in the dam at the height desired and which protrude several feet upstream and downstream from the dam. Beavers have never learned how to make a cork!

Beavers are easy to trap and remarkably easy to tame. I have taken full grown, wild beavers from traps in the morning and by noon of the same day had them actually come to me to be stroked and patted. Dr. Vernon Bailey, eminent authority on wildlife, probably knows more about beavers in North America than does any other man. The writer has had the good fortune to make field trips with Dr. Bailey and to assist him in taking live beavers in the ingenious live trap that he devised. Modifications of this trap are now widely used in taking wild animals for stocking and breeding purposes.

Some attempts have been made to develop beaver farms, but there is no need for intensive beaver farming. These animals, with proper management, can be raised easily and in enormous numbers in the wild. All in all, beavers are the backbone of the fur industry, the greatest builders of favorable environment for wildlife and, next to systematic patrol by efficient rangers, the best protectors of the forest.

## Woods for Archers

(Continued from page 447)

birch at the shorter ranges in the 1939 national tournament. What species of birch it was I do not know. He recommends it.

Red hickory is another good arrowwood, but there is no more a red hickory than there is a Jones or a Smith birch. Yet red hickory has been so called by us bowmen and our predecessors since Maurice Thompson shot it over the Kissimmee prairies of Florida just after the

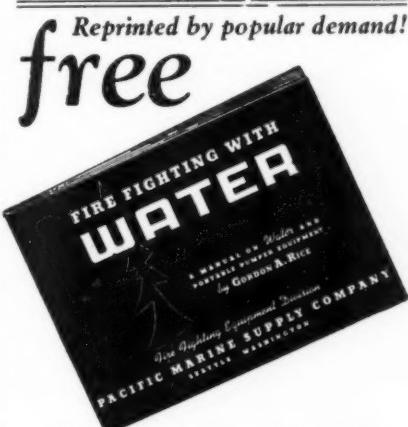
Civil War. I have used red hickory and it is very good, but I imagine it is merely the heartwood of any species of hickory. But we should know which species makes the best shafts; we need the help of the foresters.

Hard maple seems to have tremendous striking power, and to have the ability to utilize all of the power of the bow. Arrows of some woods will buckle, bend, flint and sunfish, absorbing some of the bow-

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power in these contortions, but sugar maple seems to put all available energy into flight and striking power.

Black walnut is excellent also and probably would make good target arrows. But who has black walnut in straight grain for good shafts? It has gone out with thoughtless and foolish single-mindedness, which runs in a vicious circle like this: cut more trees, to raise more corn, to reduce the price of corn, to have to cut more trees, to get more corn—and around and around the circle. It would not be so bad if it did not make it so hard for me to find straight-grained walnut for arrows. But I've had some, and it shoots straight and hits hard, as many a dead rabbit now knows, and as men of prowess have proved on many a deer.

We bowmen are great followers. Some one found Port Orford cedar a really excellent arrowwood and still the great favorite for target arrows. Sometimes it is used for hunting. Most archers have followed the lead of noted bowmen in the use of this wood, and it has been a safe course to pursue. But it has deprived us of much experiment and exploration. Personally, I prefer Sitka spruce or even Douglas fir for my hunting and roving, if light woods must be used. Sitka spruce has accounted for many a rabbit and for some deer.

We have used pine, but usually as "pine," not as definite species.

Bowmen still have a large field for exploration in search for the best arrowwoods. We have yet to test the soft maples, the river birch, the white, black and

Norway spruces and many others, including the weed trees such as dogwood and redbud; and we have yet to learn about beech, hackberry and sycamore. No one knows what unimagined virtues some of these woods may have—the gums, oaks, serviceberry and larch.

As between the archer and the forester there is—or should be—a common bond. Both find in wood the same beauty and romance; both are likely to share a dislike for metals if wood will serve the purpose; both take delight in the ax and the saw, the plane, spokeshave and scraper, to uncover the wooden image to which they are the sculptors and revealors, be that image a bedstead or a bow.

Certainly we archers need the foresters and the forests. We make our bows and arrows from forest products—sometimes from the most weedy weeds. Yet we pay the highest prices for wood. We need the abstract, cold-blooded sympathy and help of the foresters, unless we can have their warm, active friendship and participation. We are a varying horde with a single sentiment. Some of us are poor, some wealthy, some are so young they are on the peach-fuzz side of pubescence and others are hirsute as the chimpanzee. We are men, women, children, sons and daughters, but we all like our woods and our forests, and we must have the thoughts of the foresters if some of the woods we love are not to vanish from the face of the American continent as they have gone from that other hemisphere now mechanized and metalized to the unhappiness of millions.

## Moves on the Oregon Checkerboard

(Continued from page 453)

operation. Emphasis is placed upon the desirability of assuring prompt restocking of openings and of leaving residual stands in thrifty condition. Where much of the stand is defective, this is no easy task for either buyer or seller. The method followed is to discuss with each operator the objectives of these regulations and practicable means by which they can effectively be applied. Operator response has been highly satisfactory.

The forester who enters these operations expecting to find European forestry transplanted to these hills will be disillusioned. In these mature, often defective stands, it cannot be done. He will find areas where practically everything has been cut or knocked down except two or three large seed trees an acre. He will find other operations, larger in total area, where a considerable number of trees remain standing, some of them large defectives, more of them sound poles and sawlogs. By gradual adoption of tractors, usually in conjunction with present steam equipment, changes in method appear painless.

Slash disposal is based upon Oregon law, but with certain important departures. In pine, the trend is toward piling and burning; one operator spends forty cents a thousand feet logged, and is well pleased with results. In fir, the state forester cooperates to experiment with new

methods, such as area firing, spot burning in safe weather, special attention to roads and snag areas, and relaxation wherever permissible of the broadcast burn requirement. This autumn a number of CCC crews will be assigned to testing new methods, under direction of the state wardens.

Selling by scale was found impracticable because there were not funds to employ sealers enough to cover two hundred going operations. On a partial basis, such a system would be inequitable because, obviously, operators in highly defective timber would insist upon buying by scale while those in sound timber, yielding more than the cruise, would prefer to keep the old system. It was found that operators, when buying by log-scale and thus paying for what was in the log, would leave slightly defective sticks in the woods, reducing the total yield of usable material and increasing the fire hazard.

The solution is believed to lie in more intensive cruising, with special attention to defect occurrence, and application of diameter limits, to be controlled by check-sealing and mill tallying of sample area yields. Appraisals are being made on a basis of finding salable values in number one and number two logs. In the case of large sales, periodic price revisions, related to market prices as well as log-

quality, can be provided for in the contract, and the buyer will be assured of a satisfactory over-all realization. If there are bargains in some cruises there also are headaches in others, and the objective is to eliminate both extremes. The old system of flat species prices led to bargain picking and away from bidding upon defective stands. The new plan is intended to fix prices according to local conditions and realizable values. This principle has long been in effect upon the national forests; its novelty lies in applying it to lump volume sales on cruise.

Nobody need fear that the operator is going to be able to impose upon Uncle Sam in the matter of buying prices. In the first place, the appraisers are learning their work from the mill back. In the second place, the counties are looking down their necks, intent upon seeing to it that the timber brings what it is worth. Finally, the region is beginning to experience an influx of operators, including plywood manufacturers from up north, looking for timber.

Booms do not disturb the equanimity of the Interior Department. Neither does the advent of a new administrative bureau. Yet there have been notable innovations by way of giving wider latitude of action to the administrator. Washington being three thousand miles away, such decentralization helps; but, judging by the time required to clear routine matters there and route them back, it would appear that a bit of streamlining in the home office might be to the point.

Responsibility for certain tasks important to the O and C Lands Administration lies outside its control. The handling of trespass cases of various classes, including forest incendiarism, is committed to another bureau in the Interior Department, and this work lags for lack of adequate direct appropriations. Legal action in such cases must be approached circuitously, and the outcome too often is inaction. Although they number hundreds there is no record, outside the county offices, of mining claims standing against these lands. This condition obtains upon all Federal domain, but the Congress consistently declines to provide for making such records readily available to those who manage affected public properties. To an outsider these appear to be serious and unnecessary handicaps upon a new business enterprise.

As of the date of this report, the Administrator does not know whether he has jurisdiction over 2,200,000 acres or 2,681,281, for the status of nearly half a million acres, revested in 1916 but subsequently claimed by the Forest Service, is undetermined. Obviously the question is highly important from the angle of long-time planning. An early decision is vital, for if this large area is to be integrated with that now being managed, the O and C staff should start necessary fact finding at once. Pending executive decision, the local administration proceeds to develop only the undisputed area. The staff is being organized into an effective unit. These men are capable and energetic and have public confidence with them.

## MINIATURE MAMMAL MODELS

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For 25 years Louis Paul Jonas has been identified with Natural History Museums. He has designed and built many of the outstanding Animal Habitat Groups in the country. Of his sculpture, perhaps the most outstanding is the famous Grizzly Bear statue in front of the Colorado Museum of Natural History, Denver, presented to the city by Mr. John McGuire as a memoir of vanishing wildlife.

The original study models for many of these groups have been preserved and reproductions in bronze or other materials were sold to collectors and museums. Such reproductions, however, proved to be too expensive or otherwise inadequate for popular use.

In recent years Mr. Jonas has devoted much of his time to finding a suitable medium for such reproductions. Finally he has discovered a casting material and developed a process for its use which makes the reproductions of his models not only relatively inexpensive but practically unbreakable and marvelously receptive to color.

All of this work is done in Mr. Jonas' Studio at Lake Mahopac, N. Y. The original models are designed and modeled by Mr. Jonas himself; the moulds are made and the casting is done by trained assistants under his direct supervision.

The models are all one-tenth scale — modeled true to life in every detail. The casts are hand painted with permanent oil colors and great care is given to bringing out the colors nature provided to the animals.

The following Models are now available (Scale 1/10):

NORTH AMERICAN GROUP		AFRICAN GROUP	
Bison	\$25.00	Elephant	\$70.00
Musk Ox	20.00	Rhinoceros	35.00
Big Horn Sheep	17.50	Hippopotamus	30.00
White Sheep	15.00	Giraffe	70.00
Mountain Goat	12.00	Eland	30.00
Prong Horn Antelope	20.00	Greater Kudu	30.00
Elk	25.00	Grant's Zebra	30.00
Elk (female)	10.00	Grey's Zebra	32.50
White Tail Deer	25.00	African Buffalo	30.00
Caribou	27.50	Hartebeeste	20.00
Moose	27.50	Grant's Gazelle	15.00
Beaver	5.00	Impalla	15.00
Dow's Tapir	15.00	Gnu	20.00
Puma	12.50	Oryx	25.00
Polar Bear	15.00	Gorilla	15.00
Kodiak Bear	15.00	Ostrich	10.00
Grizzly Bear	15.00	Klipspringer	7.50
Black Bear	10.00	Topi	15.00
Walrus	25.00	MISCELLANEOUS	
Mule Deer	20.00	Indian Elephant	\$70.00
Mule Deer (Fawn)	10.00	Tiger	30.00
Mule Deer (Doe)	12.00	Sladang	35.00
		Kangaroo	15.00
		Kangaroo (female)	12.00

## MINIATURE MAMMAL MODELS

919 - 17TH STREET, N. W.

WASHINGTON, D. C.

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**AFA Board Names  
Committee on  
Elections**

The Board of Directors of The American Forestry Association at its last meeting named the following members as this year's Committee on Elections to nominate officers to serve the Association during the calendar year 1941: Verne Rhoades, of Asheville, North Carolina, Chairman; George H. Cecil of Los Angeles, California, and L. F. Livingston, of Wilmington, Delaware.

According to the By-Laws of the Association, members are entitled to make nominations independently of the Committee for any or all offices to be filled. Such nominations, however, should be signed by not less than twenty-five Association members in good standing and should reach the Committee on Elections, the American Forestry Association, 919 17th Street, N. W., Washington, D. C., not later than November 1. The Committee's nominations, together with any made by the membership, will be submitted to all members of the Association for letter ballot vote during the month of December.

Officers to be elected for next year include a President, twenty-one Vice-Presidents, Treasurer and three members of the Board of Directors. All are to serve terms of one year with the exception of the three Directors whose elections are for five years to fill expiring terms of F. W. Bessey, P. R. Camp and John W. Watzek, Jr.

**National Forest Returns Total Over Five Million Dollars**

Returns from the sale of timber, grazing fees, and other uses of the National Forests totalled \$5,859,183.87 in the 1940 fiscal year, the U. S. Forest Service reported last month. The 1940 receipts are almost a million dollars above the \$4,870,516 total for the fiscal 1939.

Forest Service officials said that the bulk of the 1940 receipts—\$3,943,022—were from timber and forest products sales, thousands of such sales being made to farmers and small timber operators in amounts of less than \$500. Grazing fees for cattle, horses, sheep and goats totalled \$1,463,126; a variety of special uses accounted for \$363,252; water power permits returned \$81,824, and special permits for deer and wild boar hunting and trout fishing on special game management areas returned \$5,728.

Twenty-five per cent of the receipts from National Forests are turned over to the various States to be used for roads and schools in the counties in which the Forests are located. In addition to the 25 per cent payments to the States, ten per cent of the receipts are allotted for construction and maintenance of roads and trails in Forests within the respective states.

Intangible returns of the 160 National Forests are of much greater value than the direct cash returns.

**WHO'S WHO**

Among the Authors in This Issue

E. A. McILHENNY (*A New Sport*), a lover of wildlife, has made the study of the lives and characteristics of birds and beasts his avocation. A distinguished citizen of the South, well known as a business man, explorer and writer, his beautiful estate at A very Island, Louisiana, is a now world-famous wildlife sanctuary—the home and refuge of hundreds of thousands of snowy herons and other birds, native and migratory.

RAYMOND B. JANSEN (*Trees and Postage Stamps*), a native of Illinois, is a scientist and writer whose chief interests lie in the fields of geology, botany and paleobotany.

A. E. ANDREWS (*Woods for Archers*), of Indianapolis, is an enthusiastic archer and experienced bowman.

W. T. COX (*The Beaver—Friend of the Forest*) has been prominently identified with national forestry work since he was graduated from the University of Minnesota in 1906. Of late years he has been devoting himself to the wildlife field, and is now Regional Biologist for the Soil Conservation Service.

JOHN L. BLACKFORD (*Birds of the Yellow Pine Country*) has an incurable predilection for the outdoors—a malady from which, he says, as a native Montanan, he has no wish to recover. He knows well the vast forests and sunny groves of the pine hills of the West, and his articles—dealing chiefly

with bird life—have appeared in current national magazines.

JOHN B. WOODS (*Mores on the Oregon Checkerboard*) is a forester of national repute, now stationed at Portland, Oregon, as Secretary-Manager of the Oregon Forest Fire Association.

THE COVER—"Wild Deer" in the Banff National Park, photographed by the Canadian Pacific Railway.



John L. Blackford



Raymond B. Jansen

# *Yours For The Asking*

Your Association has available a limited quantity of the following reprints of articles which have appeared in previous issues of AMERICAN FORESTS Magazine. As a service to Members these reprints are offered for a 3c stamp to cover postage and handling.

These articles have been reprinted at the request of Association Members, indicating their value as educational material — all are designed to promote the best interests of conservation.

Look over the following list, pick out the material which you can use, mail a 3c stamp to cover each reprint ordered. We shall be glad to mail them direct to you or to friends and business associates whom you may desire to interest in the work of the Association.

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2. Bracing—A. Robert Thompson
3. Pruning Principles—A. Robert Thompson
4. Let's Plant a Tree—Properly!—A. Robert Thompson

## REORGANIZATION

5. What Conservation Leaders Say
6. Why Rock The Boat? Editorial—Gifford Pinchot
7. Transfer of Forest Service not Contemplated
8. A Dangerous Proposal—Henry S. Graves

## MISCELLANEOUS

9. The National Community Christmas Tree—Elizabeth Peeples
10. My Hopes for the CCC—Robert Fechner
11. The Oregon Checkmate—Ovid Butler
12. The Dutch Elm Disease in Europe—R. Kent Beattie
13. Stream Pollution—Editorial—Ovid Butler
14. Pine Tree Bankers—Samuel Lubell and Al Pollard
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18. The Little Preacher—W. C. McCormick
19. A Forest Credit System—Burt P. Kirkland
20. Where There's A Well—Gilbert Stewart
21. Forest Activities for Everybody
22. The Forest Fire Helpers—a Masque—Shirley W. Allen
23. How a Tree Grows—Pictorial Chart
24. The Eleventh Commandment—Walter Lowdermilk

## TEAR OUT AND MAIL

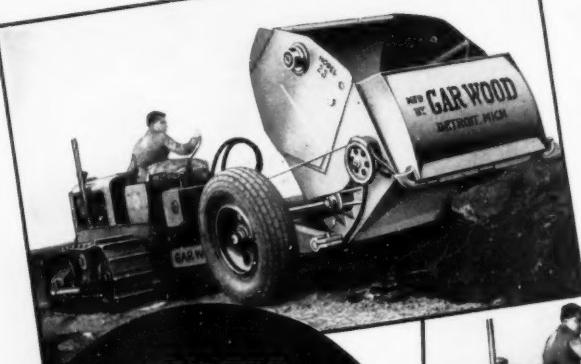
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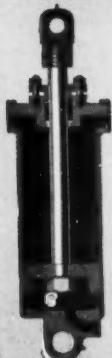
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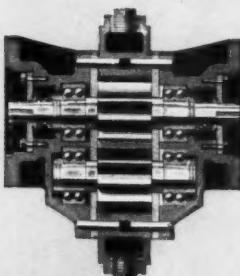
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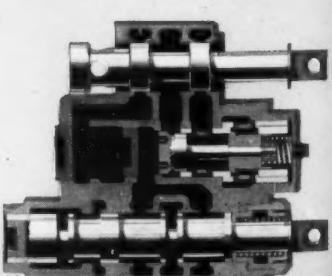


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